Series 1959, No. 16

Issued November 1962

SOIL SURVEY

Yadkin County North Carolina

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION

HOW TO USE THE SOIL SURVEY REPORT

THIS SURVEY of Yadkin County was made to learn about the nature and extent of each kind of soil. The report contains a description of each soil and statements about what that soil will do under different kinds of use and management. A soil map, made from the aerial photographs used in the field, is at the back of this report. This map shows the boundary of each soil mapped, as well as roads, houses, streams, and other important landmarks. Remember, however, that woodlands may have been cleared and fields rearranged since the county was photographed.

Find your farm on the map

Look at the "Index to Map Sheets," which is a small map of the county. This map shows the main roads and streams and several place names. Look for the area where your farm is located and notice the big number in the rectangle that encloses this area. That number tells you the map sheet or sheets of the large map on which you will find your farm.

Turn to the map sheet or sheets of the large map that shows the area of your farm. Take a little time to become acquainted with the photograph. See if you can pick out your farm and locate its boundaries. Your county agent or a representative of the Soil Conservation Service will help you.

Look at the lines that are boundaries of the different kinds of soil. Each kind of soil is marked by a letter symbol. Make a list of the different symbols on your farm and then turn to the "Soil Legend" that accompanies the soil map. On this legend, each symbol is followed by the name of the soil it identifies.

Learn about your soils

Suppose you have found an area on your farm marked with the symbol CfB2. The symbol CfB2 identifies Cecil fine sandy loam, 2 to 7 percent slopes, eroded. How does this soil look in the field? What does it need to control runoff and erosion? How is it used? How much will it produce? These are questions answered in the report.

Cecil fine sandy loam, 2 to 7 percent slopes, eroded, and all other soils mapped in Yadkin County are described in the section "Descriptions of Soils." After you have read about the Cecil soil, turn to the section "Use and Management of Soils." This section discusses the use and management of all soils in the county by groups, called capability units.

Finding information

The "Guide to Mapping Units" at the back of this report lists the soils of the county according to the alphabetic order of their symbols. It gives the page number for the description of each soil, of its capability unit, and of its woodland suitability group.

Farmers and those who work with farmers will be particularly interested in the sections "Descriptions of Soils" and "Use and Management of Soils."

Foresters and others interested in woodlands can refer to the section "Use and Management of Woodland." This section tells about hazards to the growth of trees and what yields of loblolly pine and shortleaf pine can be expected.

Engineers working with farmers will be helped in building terraces, irrigation systems, and farm ponds by reading the sections "Descriptions of Soils" and "Engineering Applications." Highway and construction engineers will also find much helpful information in these sections.

Soil scientists will find information about how the soils were formed and classified in the section "Formation and Classification of Soils."

Students, teachers, and other users will find information about the soils of the county and their management in various parts of the report, depending on their particular interest.

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This survey was made as a part of the technical assistance furnished by the Soil Conservation Service to the Tri-Creek Soil Conservation District, which was organized in January 1938. This is a 4-county district with area headquarters at North Wilkesboro in Wilkes County. It was the fourth soil conservation district organized in North Carolina. Fieldwork for this survey was completed in 1959. Unless otherwise indicated, all statements in the report refer to conditions in the county at that time.

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SOIL SURVEY OF YADKIN COUNTY, NORTH CAROLINA

FIELDWORK BY J. D. ROBERTS, LAWRENCE D. CURLE, AND OTHERS, SOIL CONSERVATION SERVICE

REPORT BY LAWRENCE D. CURLE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION

FARMING is the main occupation in Yadkin County. Tobacco, corn, small grains, hay, and pasture are the principal crops, and brightleaf tobacco is the main cash crop. Dairy cattle and poultry are also important.

The county is on the upper Piedmont Plateau in the northwestern part of North Carolina (fig. 1). It has a

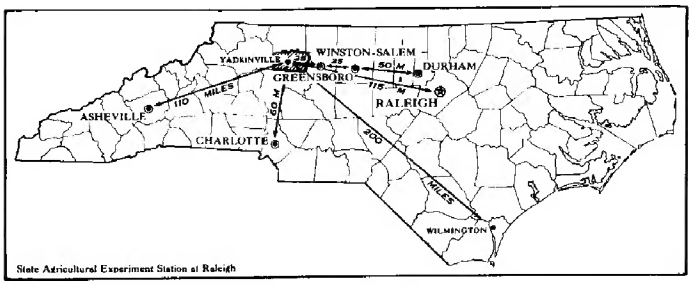

Figure 1.—**Location of Yadkin County in North Carolina.**

total area of 335 square miles, or 214,400 acres. In 1960, the population of the county was 22,804 and the population of Jonesville, the largest town, was 1,895. Yadkinville, the county seat, had a population of 1,644 in 1960.

Most of the county, like other parts of the upper Piedmont Plateau, consists of gently sloping to strongly sloping uplands, but areas near the larger streams are more rugged. Along the Yadkin River and many of its tributaries there are nearly level flood plains.

The climate is warm-temperate. Rainfall is generally sufficient to supply the needs of growing crops, but short periods of drought are common in summer.

General Soil Areas

A colored map near the back of this report shows the general soil areas of Yadkin County, or soil associations as they are called in this report. A soil association consists of soils that occur together in a characteristic pattern. On the general soil map, each association is shown by a separate color and is named for the soil series, or groups of soils, that dominate in the association. Soils other than those named are also present in most of the associations. In some associations the soils of only one series dominate. The soils in each soil association may be nearly alike, or they may differ greatly.

The general soil map is helpful to those who want a general idea of the soils, who want to compare different parts of the county, or who want to locate large areas suitable for a particular kind of agriculture or other broad land use. The map will not give enough information for the study of individual farms or for the planning of farm operations.

In the following pages the five soil associations in the county are described, and their broad agricultural uses are discussed.

Cecil-Appling Association

Deep, well-drained, medium-textured soils over gneiss, granite, and schist, on broad, gently rolling ridges

This soil association is well distributed and makes up about 78 percent of the county. It occurs on a broad, gently rolling plain that is dissected by many streams and smaller drainageways. Dominant in the association are the Cecil and Appling soils. These soils formed on uplands in deep residuum that weathered from gneiss, granite, and schist. They are well drained and have a friable surface layer of fine sandy loam, which is gravelly in some places. Most of the acreage has been cultivated and is eroded. In a few small areas, severe erosion has removed the original surface soil and has exposed the clay loam subsoil.

The Cecil soils, which make up about 80 percent of this association, have a brownish surface layer and a red clayey subsoil. The Appling soils have a grayish surface layer and a yellowish-red subsoil. They are in small scattered areas west of Yadkinville.

Also in the association are Madison and Lloyd soils. The Madison soils resemble Cecil soils in color and texture, but they contain more mica than Cecil soils and are steeper. The Lloyd soils are darker red than the Cecil soils and formed from mixed acidic and basic rocks.

Small areas of Worsham soils and Local alluvial land are at the heads of draws and at the base of slopes along drainageways. The narrow flood plains consist of Mixed alluvial land, poorly drained.

About half of the association is cropland; the rest is wooded. The average farm is about 60 acres in size and is farmed full time by its owner. Most of the farms are of the general type, but there are a few small dairy and beef cattle farms. The soils, in general, respond to

good management. They are easily tilled and are suited to a wide range of crops. A large acreage is used for brightleaf tobacco, corn, small grains, and hay. Soils of capability classes II and III predominate.

Madison Association

Moderately deep, well-drained, medium-textured, micaceous soils over quartz mica schist and mica gneiss, on rolling to steep ridges and slopes

This soil association makes up about 4 percent of the county and is in two well-defined areas, one in the east-central part and the other in the west-central part. The association is on narrow to broad ridges and steep slopes and is dissected by many streams. Most of the acreage has been cultivated and is slightly to moderately eroded. It includes small areas along draws, at the base of slopes, and on small flood plains.

The Madison soils occupy about 60 percent of the association. These soils are micaceous, friable, and well drained. They formed on uplands in shallow to moderately deep residuum that weathered from quartz mica schist and mica gneiss. Their surface layer is fine sandy loam or gravelly fine sandy loam.

Also in the association are Cecil, Appling, and Lloyd soils. These soils are deeper than Madison soils and contain less mica. The Appling soils are not so red as the Madison, but the Lloyd soils are darker red.

Worsham soils and Local alluvial land are in the small areas along draws and at the base of slopes. On the narrow flood plains are Wehadkee and Chewacla soils and Mixed alluvial land, poorly drained. The minor soils and the land types make up about 40 percent of the association.

About 50 percent of this association is in crops and pasture, and the rest is wooded. The farms are about 60 acres in size, and most of them are operated full time by their owners. Most of the farms are of the general type, but there are a few small dairy and beef cattle farms. The soils are easily tilled, respond well to good management, and are suited to a wide range of crops. The chief crops grown are brightleaf tobacco, corn, small grains, hay, and ladino clover and tall fescue for pasture. About 75 percent of the association is in capability classes II, III, and IV.

Lloyd-Iredell Association

Deep to moderately deep, well drained to moderately well drained, fine-textured soils over granodiorite, on gently rolling ridges

This association makes up about 7 percent of Yadkin County and covers all of the southeastern corner. It is on a rolling plain that is dissected by many streams and smaller drainageways. Dominant in the association are the Lloyd and Iredell soils, which differ widely.

The Lloyd soils are moderately deep to deep and are generally rolling to steep. They formed in deep residuum that weathered from dark-colored granite and dioritelike rocks, and they have a dark-brown loamy surface soil and a dark-red, friable clayey subsoil.

The Iredell soils are moderately deep in most places, but in some spots are shallow. These soils formed from weathered products of dioritelike rocks and generally occur on gentle slopes. They have a grayish fine sandy loam surface soil and an olive-colored, heavy plastic clay subsoil.

Included in this association are Wilkes and Mecklenburg soils. The Wilkes soils resemble the Iredell but lack a well-defined subsoil and in many places are gravelly. Mecklenburg soils have some characteristics of the Lloyd soils and some of the Iredell.

Lloyd soils make up about 68 percent of the association. They occur in small scattered areas in a belt that extends from Huntsville to Boonville. Iredell soils, which make up about 27 percent of the acreage, are in a small area west of Huntsville. The rest of the acreage is in Wilkes and Mecklenburg soils. The Wilkes soils are on the steeper slopes and are in scattered, irregularly shaped areas within larger areas of Iredell soils.

About 60 percent of the association is wooded, and the rest is in crops. Most farms are about 70 acres in size and are farmed full time by their owners. General farming is most common.

Although they are only moderately easy to work, the Lloyd soils respond well to good management. The Iredell soils are moderate to poor in workability and are medium in productivity. The Lloyd and the Iredell soils are used chiefly for corn, small grains, and hay. They are not suited to brightleaf tobacco but are good for pasture. Soils of capability classes II and III predominate.

Hayesville-Cecil-Halewood Association

Moderately deep, well-drained, medium-textured soils over gneiss and schist, on narrow sloping ridges and steep slopes

This association makes up about 7 percent of the county. It covers a well-defined area in the northwestern corner and is in a discontinuous strip along the northern boundary. It occurs on mountain uplands that are dissected by many, small, nearly straight drainageways.

Hayesville, Cecil, and Halewood soils—the chief soils in this association—are friable and well drained. They formed in residuum that weathered from coarse-grained gneiss and schist. They have a sandy surface layer that is stony and gravelly in many places. Where they have been cultivated, these soils are eroded, and in severely eroded areas the clay loam subsoil is exposed.

Hayesville and Cecil soils, which occupy about 75 percent of the association, have a dark-brown surface layer and a red clayey subsoil. These soils occur in the Brushy Mountains, where they adjoin areas of Halewood soils, and on steep, north-facing slopes along the Yadkin River in the northern part of the county.

Halewood soils occupy about 25 percent of the association. These soils have a grayish-brown stony surface layer and a yellowish-red or brownish subsoil, which in some places is weakly defined.

This association is mostly wooded, but some of the acreage is used for general farming, and some of the upper slopes and ridgetops are used for orchards. The farms are about 150 acres in size and are farmed by their owners. Generally the soils are easy to till and respond well to good management. On milder slopes they are suited to a wide range of crops. Brightleaf tobacco, corn,

and hay are the chief crops. Soils of capability classes VI and VII predominate.

Mayodan-Wadesboro Association

Deep, well-drained, medium-textured soils over Triassic sandstone and shale, on broad, gently rolling ridges

This association makes up about 4 percent of the county. It is southeast of Yadkinville in a distinct area adjacent to Davie County. The area is on a broad, gently rolling plain that is dissected by a well-defined pattern of drainage.

The Mayodan and Wadesboro soils, the dominant soils in this association, are friable and well drained. They formed on uplands in deep beds of residuum that weathered from Triassic sandstone and shale. The surface layer is generally fine sandy loam. Most of the acreage has been cultivated and is slightly to moderately eroded.

The Mayodan soils, which make up about 60 percent of the association, have a grayish-brown surface layer and a yellowish-red clayey subsoil. The Wadesboro soils occur in well-defined belts next to the Mayodan soils and make up about 40 percent of the association. They have a brownish surface soil and a red, compact clayey subsoil.

Roughly 75 percent of this association is in crops, and the rest is wooded. Most of the farms are about 60 acres in size. They are mainly general farms and are operated full time by their owners. The soils are generally easy to till. They respond well to good management and are suited to a wide range of crops. Brightleaf tobacco, corn, and small grains are the chief crops grown. Soils of capability classes II and III predominate.

Use and Management of Soils

This section consists of two main parts. The first part describes capability grouping and discusses the management of soils by capability units, or management groups. The second part is a table that lists estimated crop yields for each soil in the county under two levels of management.

Capability Groups of Soils

The capability classification is a grouping that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to management.

In this system all the kinds of soil are grouped at three levels, the capability class, the subclass, and the unit. Eight capability classes are in the broadest grouping and are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products. Yadkin County has no soils in class VIII.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes there can be up to four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil will interfere with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the country, indicates that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain only subclasses *w*, *s*, and *c*, because the soils in it are not susceptible to erosion but are restricted by other limitations largely to use as pasture, range, woodland, or wildlife habitats. Yadkin County has no soils in class V.

Within the subclasses are the capability units, which are groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping of soils for making many statements about their management. Capability units are generally identified by numbers assigned locally, for example, IIe-1 or IIIe-2.

Soils are classified in capability classes, subclasses, and units according to the degree and kind of their permanent limitations. Not considered in this classification are major projects of landforming or reclamation that would change the slope, depth, or other characteristics of the soil.

The six classes in the capability system, and the subclasses and units in this county, are described in the list that follows.

Class I.—Soils having few limitations that restrict their use.

Capability unit I-1: Nearly level, deep, well-drained soils on low stream terraces.

Class II.—Soils having some limitations that reduce the choice of plants or require moderate conservation practices.

Subclass IIe: Soils subject to moderate erosion if they are not protected.

Capability unit IIe-1: Gently sloping, moderately coarse textured soils with friable, reddish subsoil, on the uplands.

Capability unit IIe-2: Gently sloping, medium to moderately fine textured soils with dark-red, friable subsoil, on the uplands.

Capability unit IIe-3: Gently sloping, moderately coarse to medium textured soils with a plastic clay subsoil through which water moves slowly.

Subclass IIw: Soils that are moderately limited by excess water.

Capability unit IIw-1: Well-drained soils on flood plains, subject to occasional overflow.

Capability unit IIw-2: Moderately well drained soils on stream terraces and in upland depressions.

Class III.—Soils having severe limitations that reduce the choice of plants, or require special conservation practices, or both.
- Subclass IIIe: Soils subject to severe erosion if they are cultivated and not protected.
  - Capability unit IIIe-1: Sloping, moderately coarse textured soils with friable to firm, reddish subsoil, on the uplands.
  - Capability unit IIIe-2: Sloping, medium- to fine-textured soils with dark-red, friable to firm, clay subsoil, on the uplands.
  - Capability unit IIIe-3: Sloping, moderately coarse to medium textured soils with plastic clay subsoil through which water moves slowly.
  - Capability unit IIIe-4: Sloping, moderately coarse textured soils on the uplands; shallow to bedrock.
  - Capability unit IIIe-5: Severely eroded, gently sloping to sloping, moderately fine textured soils with a friable or firm, red clay subsoil, on the uplands.
  - Capability unit IIIe-6: Stony, sloping soil on the uplands.
- Subclass IIIw: Soils that are severely limited by excess water.
  - Capability unit IIIw-1: Somewhat poorly drained soils on flood plains and low terraces; variable overflow hazard.
- Subclass IIIs: Soils that have severe limitations of moisture capacity or tilth.
  - Capability unit IIIs-1: Coarse-textured, excessively drained soil on flood plains.

Class IV.—Soils having very severe limitations that restrict the choice of plants, require very careful management, or both.
- Subclass IVe: Soils subject to very severe erosion if they are cultivated and not protected.
  - Capability unit IVe-1: Strongly sloping, moderately coarse textured soils with friable, reddish subsoil, on the uplands.
  - Capability unit IVe-2: Strongly sloping, medium-textured soils with dark-red, friable to firm clay subsoil, on the uplands.
  - Capability unit IVe-3: Sloping to strongly sloping, moderately coarse textured soils that have clay subsoil through which water moves slowly.
  - Capability unit IVe-4: Strongly sloping soils that are shallow or stony.
  - Capability unit IVe-5: Sloping to strongly sloping, moderately fine textured soils that are severely eroded.
- Subclass IVw: Soils that are very severely limited because of excess water.
  - Capability unit IVw-1: Poorly drained soils on flood plains, subject to frequent overflow.
  - Capability unit IVw-2: Poorly drained soils in upland depressions.
- Subclass IVs: Soils that have very severe limitations of stoniness, low moisture capacity, or other soil features.
  - Capability unit IVs-1: Coarse-textured, excessively drained soils of low fertility, on flood plains.

Class VI.—Soils having very severe limitations that make them generally unsuitable for cultivation and limit their use largely to grazing, woodland, or wildlife food and cover.
- Subclass VIe: Soils severely limited, chiefly by risk of erosion if cover is not maintained.
  - Capability unit VIe-1: Steep, moderately coarse to medium textured soils.
  - Capability unit VIe-2: Steep, severely eroded, moderately fine textured soils that absorb water slowly.
  - Capability unit VIe-3: Steep, moderately coarse textured soils that are shallow or stony.

Class VII.—Soils having very severe limitations that make them unsuitable for cultivation without major reclamation, and that restrict their use largely to grazing, woodland, or wildlife.
- Subclass VIIe: Soils very severely limited, chiefly by risk of erosion if cover is not maintained.
  - Capability unit VIIe-1: Very steep, moderately deep soils that are slightly to moderately eroded.
  - Capability unit VIIe-2: Soils that are steep and very shallow, or very steep and severely eroded.

Management by capability units

In this subsection the soils of Yadkin County are grouped in 27 capability units. These groups of soils are described, and general practices of management are suggested. For specific suggestions about the amounts and kinds of fertilizer to use on each soil, see your county agricultural agent or the local representative of the Soil Conservation Service. Turn to the subsection "Descriptions of Soils" for a more detailed description of each soil.

CAPABILITY UNIT I-1

Nearly level, deep, well-drained soils on low stream terraces: State fine sandy loam is the only soil in this capability unit. It has a friable surface layer, 8 to 12 inches thick, and a friable subsoil of yellowish-brown sandy clay loam or silt loam.

This soil is not likely to erode. Infiltration of water is moderately rapid, and permeability is moderate. The available moisture-holding capacity is high. This soil contains a medium amount of organic matter and a moderately small amount of available plant nutrients. It is medium acid.

Use and management.—The area of this soil in Yadkin County is about 350 acres. More than 90 percent of the acreage is in crops, and the rest is in pasture.

This soil is well suited to all crops grown locally. Under good management, it can be used intensively for row crops. Yields are high. A suitable cropping system will help to maintain organic matter. Suitable cropping systems are:

Figure 2.—**Tobacco irrigated by sprinklers on Mayodan fine sandy loam, 2 to 7 percent slopes, eroded.**

1. Each year, row crop followed by winter cover, which is seeded in fall early enough to make a good growth before it is plowed under in spring.
2. First year, row crop; second year, row crop followed by small grain and fescue; third year harvest the small grain and the fescue hay crops.

This soil responds well to fertilizer. Nitrogen is needed for high yields of corn, small grains, and grasses. Lime is required for alfalfa, and most other crops respond well to lime. Soil tests should be made to determine the amount of phosphate and potash needed for a specific crop. This soil is easy to till and can be worked within a wide range of moisture content. It is well suited to pasture and trees.

CAPABILITY UNIT IIe-1

Gently sloping, moderately coarse textured soils with a friable, reddish subsoil, on the uplands: In this unit are deep, well-drained soils that are slightly eroded to moderately eroded. The surface layer ranges from 4 to 12 inches in thickness, according to the amount of erosion. The subsoil is yellowish red to red, firm to friable clay or clay loam. The soils in this unit are:

Altavista fine sandy loam, 2 to 7 percent slopes.
Appling fine sandy loam, 2 to 7 percent slopes.
Appling fine sandy loam, 2 to 7 percent slopes, eroded.
Cecil fine sandy loam, 2 to 7 percent slopes.
Cecil fine sandy loam, 2 to 7 percent slopes, eroded.
Cecil loam, 2 to 7 percent slopes, eroded.
Cecil gravelly fine sandy loam, 2 to 7 percent slopes.
Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded.
Madison fine sandy loam, 2 to 7 percent slopes.
Madison fine sandy loam, 2 to 7 percent slopes, eroded.
Mayodan fine sandy loam, 2 to 7 percent slopes.
Mayodan fine sandy loam, 2 to 7 percent slopes, eroded.
Wadesboro fine sandy loam, 2 to 7 percent slopes.
Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded.
Wickham fine sandy loam, 2 to 7 percent slopes, eroded.

Infiltration of water and permeability are moderate to moderately slow, and the available moisture-holding capacity is high to medium. These soils are moderately low to low in organic matter and in natural fertility. They are medium acid to strongly acid.

Use and management.—These soils, the most extensive and most important agriculturally in the county, have a total area of about 64,500 acres. Approximately 56 percent of the acreage is in crops, 35 percent is wooded, 7 percent is in pasture, and 2 percent is idle or in other uses.

These soils are well suited to all crops grown locally. They are excellent for pasture and trees. If runoff is controlled, they can be used intensively for row crops (fig. 2). Suitable cropping systems are:

1. First year, row crop followed by winter cover; second year, row crop followed by small grain and fescue; third year, harvest small grain and allow fescue to grow; fourth year, fescue.
2. First year, row crop followed by small grain; second year, small grain followed by lespedeza.

The soils of this unit respond well to fertilizer. The amounts of phosphate and potash needed ought to be determined by soil tests. On most fields fertilizer can be profitably applied in large amounts. Apply nitrogen to increase yields of grasses and other nonlegumes. Generally, yields of legumes are also increased by additions of nitrogen. Alfalfa and red clover require lime, and liming increases the yields of most other crops. Boron is needed to maintain good stands of alfalfa.

Winter cover crops and crop residues increase infiltration of water and reduce erosion. If row crops are grown, management ought to include contour tillage, terracing, stripcropping, or other mechanical practices. Grassed waterways are needed in large depressions and draws. A stripcropped field is shown in figure 3.

CAPABILITY UNIT IIe-2

Gently sloping, medium to moderately fine textured soils with dark-red, friable subsoil, on the uplands: This unit consists of deep, well-drained soils that are slightly to moderately eroded. These soils have a reddish-brown, very friable to friable surface layer of sticky loam or clay loam. The thickness of the surface layer ranges from 4 inches in the moderately eroded soils to 12 inches or more in the slightly eroded soils. The subsoil is firm to friable, dark-red sticky clay. The soils in this unit are:

Davidson clay loam, 2 to 7 percent slopes, eroded.
Hiwassee loam, 2 to 7 percent slopes, eroded.
Lloyd loam, 2 to 7 percent slopes.
Lloyd loam, 2 to 7 percent slopes, eroded.
Starr loam, 0 to 7 percent slopes.

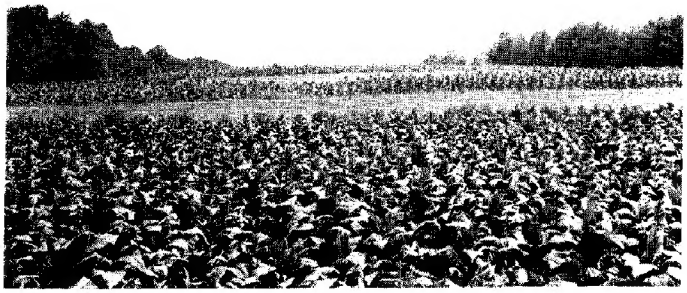

Figure 3.—**Tobacco and small grain in strips on Appling fine sandy loam, 2 to 7 percent slopes, eroded.**

Figure 4.—Stripcropping on Lloyd loam, 2 to 7 percent slopes, eroded.

Infiltration of water and permeability are moderate. The capacity to supply water to plants is high. These soils are moderate to moderately high in native fertility, are moderate to moderately low in organic matter, and are slightly acid to medium acid.

Use and management.—The total area of these soils is 4,100 acres. About 47 percent of this acreage is in crops, 44 percent is wooded, 4 percent is in pasture, and 5 percent is in other uses.

These soils are well suited to all crops locally grown except brightleaf tobacco. They are the best soils in the county for alfalfa and are excellent for pasture and trees. Suitable cropping systems are:

1. First year, corn followed by winter cover; second year, cotton or corn followed by small grain and fescue; third year, small grain and fescue (overseed with lespedeza or clover and harvest grain); fourth year, fescue and lespedeza or clover.
2. First year, corn followed by winter cover; second year, cotton followed by small grain and fescue; third year, harvest grain, allow fescue to grow, and overseed lespedeza.

Though they contain a larger supply of natural plant nutrients than most other soils, these soils ought to be tested to determine their need for additions of nitrogen, phosphate, and potash. They need lime if alfalfa or red clover is grown. Boron is required for high yields of alfalfa. If the supply of moisture is high, the response to fertilizer is excellent.

These soils can be tilled within only a narrow range of moisture content. If they are worked when wet, they puddle and crust. By turning under crop residues and cover crops, organic matter and the intake of water are increased and tilth is improved.

In some places, management is needed that provides terracing, contour tillage, or stripcropping (fig. 4). Apply these practices singly or in combination, according to the hazard of erosion. Waterways in depressions and draws should be kept in grass. Under good management, these soils are well suited to pasture and trees.

CAPABILITY UNIT IIe-3

Gently sloping, moderately coarse to medium textured soils with plastic clay subsoil through which water moves slowly: In this unit are moderately deep, well-drained soils on the uplands. These soils are slightly eroded to moderately eroded. Their surface layer is friable loam or fine sandy loam, 4 to 12 inches thick. The subsoil is yellowish-red or olive-brown, compact plastic clay. The soils in this unit are:

Iredell fine sandy loam, 2 to 7 percent slopes.
Iredell fine sandy loam, 2 to 7 percent slopes, eroded.
Mecklenburg loam, 2 to 7 percent slopes, eroded.

Infiltration of water and permeability are slow to moderately slow. The available moisture-holding capacity is medium to high. Fertility is moderately high, and the content of organic matter is moderately low. These soils are slightly acid to medium acid.

Use and management.—These soils make up an area of 1,370 acres in this county. Of this acreage, 47 percent is in crops, 40 percent is wooded, 10 percent is in pasture, and 3 percent is idle or in other uses.

These soils are well suited to sorghum, small grains, and lespedeza. They are good soils for pasture and are fairly suitable as woodland. They are poorly suited to tobacco and corn, though fair yields of these crops are grown on a small acreage of the Mecklenburg soil. The Mecklenburg soil is fairly well suited to alfalfa and other deep-rooted crops, but the Iredell soil is poorly suited. Suitable cropping systems are:

1. First year, row crop followed by small grain and fescue; second year, harvest small grain and allow fescue to grow; third year, fescue.
2. First year, row crop followed by small grain; second year, overseed grain with lespedeza and harvest grain.

These soils should be tested to determine the need for additions of nitrogen, phosphate, and potash. They require additions of boron if alfalfa is grown. Some crops respond moderately well to lime. Return crop residues to the soil to increase organic matter.

To prevent erosion, management should include contour tillage or stripcropping, used singly or in combination. The Mecklenburg soil is suitable for terracing, but in most places the Iredell soil should not be terraced. Natural waterways and depressions ought to be protected by a sod crop so that excess surface water can be removed safely.

CAPABILITY UNIT IIw-1

Well-drained soils on flood plains, subject to occasional overflow: In this unit are deep, nearly level to gently sloping soils of the flood plains. These soils have a thick surface layer of very friable fine sandy loam or loam that is underlain by friable, brownish loam or silt loam. The soils in this unit are:

Congaree fine sandy loam.
Congaree silt loam.
Mixed alluvial land, well drained.

Infiltration of water and permeability are moderately rapid. Erosion is not likely, but flooding is a hazard where flood control structures have not been built. Some areas are flooded annually; others are flooded every 4 or 5 years. These soils have a high available moisture-sup-

plying capacity and are seldom droughty. They are moderately low in plant nutrients and in organic matter and are medium acid.

Use and management.—These soils have a total area of 9,300 acres. About 68 percent of the acreage is cropland, 16 percent is pasture, and 15 percent is woodland. The remaining 1 percent is in other uses or is idle.

These soils are suited to all crops grown in the county. Tobacco and alfalfa, however, are grown only in those areas that are least likely to flood or are protected by flood-control structures. If they are managed well, these soils produce high yields of corn, small grains, and hay. A field of corn is shown in figure 5. The soils are well suited to truck crops and are excellent for pasture and trees. Suitable cropping systems are:

1. First year, corn followed by small grain; second year, overseed with lespedeza and harvest grain.
2. First year, corn followed by winter cover; second year, soybeans followed by winter cover.

Because they are in alluvium and contain varied amounts of nitrogen, phosphorus, and potassium, these soils should be tested to determine the kinds and amounts of fertilizer needed for specific crops. Organic matter should be returned to the soils in the form of crop residues and cover crops.

***Figure 5.*—Corn on Mixed alluvial land, well drained. This field will yield 100 bushels of corn per acre.**

CAPABILITY UNIT IIw–2

Moderately well drained soils on stream terraces and in upland depressions: In this unit are deep soils on low terraces and in depressions and draws. The surface layer is friable fine sandy loam, 6 to 12 inches thick. The subsoil is firm to friable and is sandy clay or loam. The soils of this unit are:

Altavista fine sandy loam, 0 to 2 percent slopes.
Local alluvial land.

Water enters and passes through these soils at a moderate rate. The capacity to supply moisture to plants is high. These soils are moderately low in organic matter and in natural fertility and are medium acid.

Use and management.—These soils have a total area of 830 acres in the county. About 54 percent of the acreage is in crops, 30 percent is wooded, 14 percent is in pasture, and 2 percent is idle or in other uses.

These soils are suited to many kinds of crops. They are well suited to corn, small grains, and lespedeza. They are suited to tobacco and alfalfa, but in wet seasons, stands are likely to be damaged and yields reduced. These soils are well suited to pasture and trees. Suitable cropping systems are:

1. First year, corn followed by small grain and fescue; second year, overseed with lespedeza, harvest grain, and allow fescue to grow.
2. First year, corn; second year, soybeans followed by winter cover.

Fertilizers and other amendments should be added for high crop yields. Cultivated crops and pasture plants need phosphate and potash, and nonlegumes need nitrogen. Apply fertilizers in amounts indicated by soil tests. Legumes, grasses, and other plants respond well to lime.

Crop residues and winter cover crops will furnish organic matter and keep these soils in good tilth. On slopes of more than 3 percent, contour tillage helps to restrain surface runoff. Areas that have slopes of 0 to 2 percent respond to removal of excess surface water, particularly if alfalfa or tobacco is grown.

CAPABILITY UNIT IIIe–1

Sloping, moderately coarse textured soils with friable to firm, reddish subsoil, on the uplands: This unit consists of deep, well-drained soils that are slightly eroded to moderately eroded. The surface layer is friable to very friable fine sandy loam to silt loam, 4 to 10 inches thick. Some areas contain gravel but not enough to interfere with cultivation. The subsoil is yellow to red, friable to firm clay or clay loam. The soils of this unit are:

Altavista fine sandy loam, 7 to 10 percent slopes.
Appling fine sandy loam, 7 to 10 percent slopes.
Appling fine sandy loam, 7 to 10 percent slopes, eroded.
Cecil fine sandy loam, 7 to 10 percent slopes.
Cecil fine sandy loam, 7 to 10 percent slopes, eroded.
Cecil loam, 7 to 10 percent slopes.
Cecil gravelly fine sandy loam, 7 to 10 percent slopes.
Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded.
Georgeville silt loam, 2 to 10 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded.
Madison fine sandy loam, 7 to 10 percent slopes.
Madison fine sandy loam, 7 to 10 percent slopes, eroded.
Madison gravelly fine sandy loam, 7 to 10 percent slopes.
Mayodan fine sandy loam, 7 to 10 percent slopes.
Mayodan fine sandy loam, 7 to 10 percent slopes, eroded.
Wadesboro fine sandy loam, 7 to 10 percent slopes.
Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded.
Wickham fine sandy loam, 7 to 14 percent slopes, eroded.

Infiltration of water and permeability are moderate to moderately slow. The capacity to supply moisture to plants is medium to high. These soils contain moderately small to small amounts of organic matter and plant nutrients. They are medium acid to strongly acid.

Use and management.—These soils have a total area of 33,000 acres in the county. About 52 percent of the acreage is wooded, 36 percent is in crops, 9 percent is in pasture, and 3 percent is idle or in other uses.

These soils are well suited to most crops grown locally and to pasture and trees (fig. 6). If the soils are not protected, however, they are subject to severe erosion. Row crops can be grown safely in cropping systems that

Figure 6.—**Peach orchard on Cecil fine sandy loam, 7 to 10 percent slopes, eroded.**

include close-growing vegetation 2 years in every 3. Suitable cropping systems are:

1. First year, row crop followed by small grain and fescue; second year, harvest grain and allow fescue to grow; third year, fescue.
2. First year, row crop followed by small grain; second year, overseed with lespedeza and harvest grain; third year, lespedeza.

When moisture is adequate, these soils respond well to large additions of fertilizer. Soil tests should be made to determine the amounts of phosphate and potash needed for specific crops. Nonlegumes respond well to nitrogen, and lime is required for good stands of grasses and legumes. Boron is required for good yields of alfalfa. Adding organic matter by plowing under crop residues and winter cover crops improves soil tilth and increases infiltration.

Slightly eroded areas are easy to keep in good tilth, but where the clayey subsoil is exposed, tilth is poor. The moderately eroded soils tend to crust on the surface and can be tilled only within a narrow range of moisture content. Tilth can be improved and runoff reduced by adding residues and by using a cropping system that includes grasses and legumes.

These soils need contour tillage and, in many areas, terracing. Stripcropping, including contour stripcropping, is effective. Grassed waterways should be established in depressions and draws.

CAPABILITY UNIT IIIe-2

Sloping, medium- to fine-textured soils with dark-red, friable to firm, clay subsoil, on the uplands: In this unit are deep, well-drained soils that are slightly eroded to moderately eroded. The surface layer is very friable to friable, reddish brown sticky loam or clay loam, 4 to 9 inches thick. The subsoil is firm to friable, dark-red sticky clay. The soils in this unit are:

Davidson clay loam, 7 to 10 percent slopes, eroded.
Lloyd loam, 7 to 10 percent slopes.
Lloyd loam, 7 to 10 percent slopes, eroded.

Infiltration of water and permeability are moderate. The capacity for holding available moisture is high. These soils contain a moderate amount of organic matter and a moderate supply of plant nutrients. Reaction is medium acid.

Use and management.—These soils have a total area of 2,000 acres in the county. About 52 percent of the acreage is wooded, 32 percent is in crops, 11 percent is in pasture, and 5 percent is idle or in other uses.

The soils of this group are the best in the county for alfalfa. They are well suited to corn, small grains, lespedeza, pasture, and trees but are not suited to tobacco. Clean-tilled crops should be grown only in a cropping system that includes close-growing crops at least 2 years in every 3. Suitable rotations are:

1. First year, row crop followed by small grain and fescue; second year, harvest grain, allow fescue to grow, and overseed with lespedeza or clover; third and fourth years, fescue and lespedeza or clover.
2. First year, row crop followed by small grain; second year, overseed with lespedeza, and harvest grain; third year, lespedeza.

Though these soils are higher in natural fertility than other soils in the county, they respond well to additions of nitrogen, phosphate, and potash. Liming is required for good yields of alfalfa and clover, and it increases yields of some other crops. Add boron to maintain good stands of alfalfa.

These soils can be tilled within only a narrow range of moisture content, and they are very sticky when wet. If cultivated when wet, they puddle and crust. After rains, the plow layer hardens as it dries and tillage becomes even more difficult. Crop residues and cover crops plowed under increase organic matter and thereby improve tilth and help prevent further erosion. Other suggested practices for controlling erosion are contour tillage, stripcropping and terracing. Waterways should be kept under grass.

CAPABILITY UNIT IIIe-3

Sloping, moderately coarse to medium textured soils with plastic clay subsoil through which water moves slowly: These are moderately deep, well drained to moderately well drained soils on uplands. They are slightly eroded to moderately eroded and have a friable sandy loam or loam surface layer, 4 to 12 inches thick. The subsoil is firm, plastic to very plastic clay. The soils in this unit are:

Iredell fine sandy loam, 7 to 10 percent slopes.
Mecklenburg loam, 7 to 14 percent slopes, eroded.

Infiltration of water is moderate, and permeability is moderately slow to slow. The moisture-holding capacity is medium to high. These soils are moderately high in natural fertility and are moderately low to low in organic matter. They are slightly acid to medium acid.

Use and management.—These soils have a total area of 1,050 acres in Yadkin County. About 56 percent of the acreage is in crops, 33 percent is wooded, 7 percent is in pasture, and 4 percent is idle or in other uses.

These soils are suited to only a few crops. They are well suited to small grains, lespedeza, clover, and grasses. Tobacco and alfalfa grow fairly well on the Mecklenburg soil, but they are poorly suited to the Iredell soils. Corn is grown on the soils of this unit, but yields are lower than those on soils in capability units I-1 and IIe-1.

These soils are susceptible to severe erosion if they are not protected. Clean-tilled crops should be grown only in a cropping system that provides grasses, legumes, and other close-growing crops. Suitable cropping systems are:

1. First year, milo followed by small grain; second year, overseed with lespedeza and harvest grain; third year, lespedeza.
2. First year, row crop followed by small grain and fescue; second year, overseed with lespedeza and harvest grain; allow fescue to grow; third year, fescue and lespedeza.

Additions of phosphate and potash are needed on these soils if yields are to be satisfactory. Tests should be made to determine the amounts of amendments needed for a specific crop. Nitrogen is required on soils planted to nonlegumes. Fields in legumes, grasses, and some other crops ought to be limed.

Though these soils are in good tilth in the slightly eroded areas, tilth is poor and the content of organic matter is low in the moderately eroded areas that have been cultivated. Crop residues and sod crops will increase the content of organic matter and improve soil tilth.

These soils should be tilled on the contour. Parts of the Mecklenburg soil can be terraced, but the Iredell soil is not suited to terracing. Natural waterways should be kept under permanent grass. Stripcropping will help prevent undue losses of soil and water.

CAPABILITY UNIT IIIe-4

Sloping, moderately coarse textured soils on the uplands; shallow to bedrock: The only soils in this unit, Wilkes sandy loams, 2 to 10 percent slopes, are well drained and slightly eroded. The surface layer is very friable sandy loam, 10 to 18 inches thick, and in most places is underlain directly by weathered rock. Local areas have a thin, discontinuous subsoil of plastic clay. In some areas rock is less than 10 inches from the surface.

Infiltration of water is moderate, and permeability is moderately rapid to slow. The capacity to supply moisture to plants is low. These soils contain a moderately small amount of organic matter and are moderate in fertility. They are medium acid.

Use and management.—These soils have a total area of 900 acres in the county. Of this acreage, about 58 percent is wooded, 40 percent is in crops, and 2 percent is in pasture or is idle.

These soils are suited to only a few crops. They are fairly well suited to tobacco, small grains, grasses, and some legumes. They are poorly suited to corn and are not suited to alfalfa. Pasture and forest trees do fairly well.

Because these soils are highly susceptible to erosion, row crops should be grown only in cropping systems that provide close-growing crops and grass at least 2 years in every 3. Suitable cropping systems are:

1. First year, row crop followed by small grain and fescue; second year, overseed with lespedeza or clover, harvest grain, allow fescue to grow; third year, fescue and lespedeza or clover.
2. First year, row crop followed by small grain; second year, overseed with lespedeza and harvest grain; third year, lespedeza.

These soils respond well to nitrogen, phosphate, and potash. Because the moisture-supplying capacity is low, only a moderate amount of fertilizer should be applied at one time. Areas in grasses and legumes need lime. To build up and maintain the supply of organic matter, return all crop residues to the soil.

Except in a few areas where the surface layer is fine textured, these soils are easy to keep in good tilth. They can be tilled within a wide range of moisture content. The organic matter content can be increased and tilth improved by mulching.

Because they are shallow, these soils are not suited to terracing. Contour tillage, diversions, and contour stripcropping are effective means of controlling surface runoff. Depressions, draws, and critical slopes should be kept under a firm sod.

CAPABILITY UNIT IIIe-5

Severely eroded, gently sloping to sloping, moderately fine textured soils with a friable or firm, red clay subsoil, on the uplands: This unit consists of deep, well-drained soils that have a surface layer of reddish, firm, sticky clay loam. These soils are:

Cecil clay loam, 2 to 7 percent slopes, severely eroded.
Lloyd clay loam, 2 to 10 percent slopes, severely eroded.

Infiltration of water is very slow or moderately slow. It is very slow where the surface layer is tight and is moderately slow where vegetation keeps the surface layer fairly open. Permeability is moderate. The content of organic matter is low, and the natural fertility is moderate to moderately low. The soils have a medium available moisture-holding capacity and are medium acid.

Use and management.—These soils have a total area of about 1,260 acres in the county. About 52 percent of this acreage is wooded, 35 percent is in crops, 8 percent is in pasture, and 5 percent is idle or in other uses.

These soils are fairly well suited to small grains, lespedeza, alfalfa, grasses, and trees. They are poorly suited to corn. Because the soils are highly erodible, cultivated areas need to be protected by a cropping system that keeps them in sod or close-growing crops most of the time. Suitable cropping systems are:

1. First year, small grain followed by lespedeza; second year, lespedeza.
2. First year, corn or milo followed by small grain and fescue; second year, overseed with lespedeza or clover, harvest grain, and allow fescue to grow; third and fourth years, fescue and lespedeza or clover.

All crops, including grasses and legumes, need additions of phosphate and potash for satisfactory yields. Add nitrogen for nonlegumes. Many crops require lime, and boron is necessary for maintaining good stands of alfalfa.

These soils have poor tilth and can be tilled within only a narrow range of moisture content. Because the surface layer is compacted easily and tends to crust when dry, a good seedbed is hard to prepare and crops are difficult to establish. To improve tilth, plow large amounts of crop residues or compost into these soils at regular intervals.

To prevent loss of soil and water, use long cropping systems that provide a protective cover much of the time.

In addition, stripcrop and terrace these soils and till on the contour. Maintain a permanent sod in draws and depressions.

CAPABILITY UNIT IIIe–6

Stony, sloping soil on the uplands: The only soil in this unit, Halewood stony sandy loam, 7 to 10 percent slopes, is deep, slightly eroded, and well drained. It has a surface layer, 5 to 8 inches thick, and a brownish, friable clay loam subsoil.

Infiltration of water is moderately rapid, and the available moisture-supplying capacity is medium. This soil is moderately low in organic matter and in natural fertility. It is medium acid.

Use and management.—This soil has a total area of 190 acres in Yadkin County. Of this acreage, 72 percent is wooded, 18 percent is in crops, 7 percent is in pasture, and 3 percent is idle or in other uses.

This soil is well suited to tobacco, corn, small grains, and lespedeza. It is also well suited to pasture, apple orchards, and forest trees. The erosion hazard is less severe than for most other soils in capability class III, but stones interfere with many field operations, and clean-tilled crops are difficult to grow. Suitable cropping systems are:

1. First year, row crop followed by small grain and fescue; second year, small grain and fescue.
2. First year, row crop followed by small grain and lespedeza; second year, harvest grain and allow lespedeza to grow; third year, lespedeza.

All crops, pasture plants, and orchard trees require additions of phosphate and potash for satisfactory yields. Grasses, legumes, and many other crops should be limed. Cover crops and crop residues will generally maintain the supply of organic matter. The soil is easily kept in good tilth and can be cultivated within a wide range of moisture content.

If row crops are grown, till on the contour and plant the crops in strips on long slopes. This soil is not suited to terracing. Grass the waterways in draws and depressions, and keep orchards in grass sod.

CAPABILITY UNIT IIIw–1

Somewhat poorly drained soils on flood plains and low terraces; variable overflow hazard: In this unit are deep, nearly level soils that have a surface layer of very friable silt loam, 6 to 18 inches thick. The subsoil or underlying material is brownish, friable silt loam or clay loam, mottled with gray. The soils in the unit are:

Augusta silt loam.
Chewacla silt loam.

Infiltration of water and permeability are moderately slow, and the available moisture-holding capacity is high. These soils have a moderate content of organic matter and are moderate to moderately low in natural fertility. The soils are strongly acid. The Chewacla soil is likely to be flooded at times.

Use and management.—These soils have a total area of about 3,090 acres in the county. About 52 percent of the acreage is in crops, 40 percent is in pasture, 4 percent is wooded, and 4 percent is idle or in other uses.

If these soils are drained, protected from overflow, and fertilized, yields of corn, small grains, and lespedeza are high. Tobacco and alfalfa are not suited. These soils are well suited to trees and are excellent for pasture. The amount and frequency of flooding partly determine the choice of crops to be grown on the Chewacla soils. Suitable cropping systems are:

1. Each year, corn followed by winter cover.
2. First year, corn followed by small grain; second year, overseed with lespedeza and harvest grain.

These soils respond well to applications of nitrogen, phosphate, and potash. Lime is needed for many crops. Crop residues returned to the soil improve tilth and increase infiltration.

Open ditches are easy to dig and tile is easy to install, but outlets for tile lines are difficult to keep open.

CAPABILITY UNIT IIIs–1

Coarse textured, excessively drained soil on flood plains: Buncombe loamy sand is the only soil in this capability unit. This deep soil has a surface layer more than 24 inches thick and is underlain by stratified sand, silt, and gravel.

Water enters this soil and passes through it rapidly. The organic-matter content, natural fertility, and available moisture-holding capacity are low. Reaction is strongly acid.

Use and management.—This soil has a total area of 850 acres in the county. About 19 percent of the acreage is in crops, 30 percent is wooded, 12 percent is in pasture, and 9 percent is idle.

This soil is suited to corn, milo, small grains, and lespedeza, and it produces tobacco of high quality. Yields of all crops are generally low, and crops are likely to fail in dry periods. The soil is poorly suited to pasture and trees. Examples of suitable cropping systems are:

1. First year, corn followed by small grain; second year, overseed with lespedeza and harvest grain.
2. First year, corn followed by winter cover; second, third, fourth, and fifth years, sericea lespedeza.

If the need is shown by soil testing, phosphate and potash should be added for all crops, and nitrogen for nonlegumes. It is better to apply fertilizer frequently in moderate amounts on this soil than to apply a large amount once a year. Compost and other crop residues increase moisture-holding capacity and lessen soil losses caused by surface runoff.

This soil has excellent tilth. It can be cultivated through a range of moisture from nearly wet to almost dry. Though this soil is flooded at times, crops are damaged only occasionally.

CAPABILITY UNIT IVe–1

Strongly sloping, moderately coarse textured soils with friable, reddish subsoil, on the uplands: These soils are deep, well-drained, and slightly eroded to moderately eroded. They have a friable to very friable fine sandy loam surface layer, 4 to 10 inches thick. Gravel, where it occurs, does not greatly impede tillage. The subsoil is yellowish red to red, friable to firm clay loam or clay.

The soils in this unit are:

Appling fine sandy loam, 10 to 14 percent slopes.
Appling fine sandy loam, 10 to 14 percent slopes, eroded.
Cecil fine sandy loam, 10 to 14 percent slopes.
Cecil fine sandy loam, 10 to 14 percent slopes, eroded.
Cecil gravelly fine sandy loam, 10 to 14 percent slopes.

Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded.
Madison fine sandy loam, 10 to 14 percent slopes.
Madison fine sandy loam, 10 to 14 percent slopes, eroded.
Madison gravelly fine sandy loam, 10 to 14 percent slopes.
Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded.
Mayodan fine sandy loam, 10 to 14 percent slopes.
Mayodan fine sandy loam, 10 to 14 percent slopes, eroded.
Wadesboro fine sandy loam, 10 to 14 percent slopes.
Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded.

These soils are highly susceptible to erosion. Water enters these soils and moves through them at a moderate to moderately slow rate. The available moisture holding capacity is medium to high. These soils contain moderately small to small amounts of plant nutrients and organic matter. They are strongly acid.

Partly because of the clay in the plow layer, the moderately eroded soils of this unit have poorer tilth than the slightly eroded soils. They cannot be cultivated in such a wide range of moisture content as the slightly eroded soils.

Use and management.—These soils have a total area of about 24,800 acres in the county. About 28 percent is in crops, 10 percent is pasture, and 60 percent is woodland. The remaining 2 percent is in other uses or is idle.

These soils are well suited to row crops, small grains, hay crops, pasture, and trees. Because the soils are strongly sloping, row crops should be grown only once in every 4 or 5 years. Suitable cropping systems are:

1. First year, row crop; second year, small grain and fescue overseeded with lespedeza; third and fourth year, fescue and lespedeza.
2. First year, small grain overseeded with lespedeza; allow lespedeza to grow two years or more.

Phosphate and potash are required for all crops and nitrogen for nonlegumes. Legumes and grasses, as well as many other crops, respond well to lime. Boron is needed to keep alfalfa productive.

The supply of organic matter can be increased by turning under crop residues and cover crops, and by topdressing the soil with compost. These materials improve soil tilth, increase crop yields, and help to control losses of soil and water.

These soils are generally too steep for terraces, but contour cultivation and striperopping are practical for controlling surface runoff. If striperopping is practiced, a narrow strip of a row crop should alternate with a wide strip of grasses and legumes. Grassed waterways should be kept under permanent grass.

CAPABILITY UNIT IVe-2

Strongly sloping, medium-textured soils with dark-red, friable to firm clay subsoil, on the uplands: These soils are deep, well drained, and slightly eroded to moderately eroded. The surface layer is reddish brown, very friable loam, 4 to 8 inches thick. The subsoil is friable to firm sticky clay. The soils of this unit are:

Lloyd loam, 10 to 14 percent slopes.
Lloyd loam, 10 to 14 percent slopes, eroded.

Infiltration of water and permeability are moderate. The capacity to supply moisture to plants is high. The organic-matter content is low, and the natural fertility is moderate. The reaction is medium acid.

Use and management.—These soils have a total acreage of about 1,370 acres in the county. Of this acreage, about 60 percent is wooded, 28 percent is in crops, 10 percent is in pasture, and 2 percent is idle or in other uses.

Crops well suited to these soils are corn, small grains, lespedeza, alfalfa, grasses and legumes for pasture, and trees. Brightleaf tobacco is poorly suited.

Because of the erosion hazard and the scarcity of organic matter, these soils should be cultivated in a cropping system that supplies organic matter and helps to control losses of soil and water. Suitable cropping systems are:

1. First year, small grain followed by soybeans or cowpeas; alfalfa and orchardgrass for 4 years.
2. First year, corn followed by small grain and fescue; second year, overseed with lespedeza, harvest grain, and allow fescue to grow for 3 years or more.

Though they are higher in natural fertility than many other soils in the county, these soils respond well to additions of nitrogen, phosphate, and potash. Soil tests should be made to determine the amounts needed. Liming is required for alfalfa or clover, and it increases the yields of most other crops. Add boron to maintain productive stands of alfalfa.

The slightly eroded soil in this group has good tilth, but the moderately eroded soil has poor tilth. These soils can be cultivated within only a narrow range of moisture content. They are sticky when wet and crust when they dry. Consequently, they are difficult to manage. Cover crops and crop residues increase the supply of organic matter, improve soil tilth, and help to control runoff.

These soils ought to be cultivated in a long cropping system that keeps the soils in close growing crops most of the time. Because they are steep, these soils are not suited to terracing. They are suited to striperopping on the contour. Natural waterways need to be kept under a perennial grass sod.

CAPABILITY UNIT IVe 3

Sloping to strongly sloping, moderately coarse textured soils that have a clay subsoil through which water moves slowly: These soils are slightly to moderately eroded. They have a surface layer of very friable fine sandy loam, 4 to 8 inches thick. The subsoil is very firm plastic clay. The soils in the unit are:

Iredell fine sandy loam, 7 to 10 percent slopes, eroded.
Iredell fine sandy loam, 10 to 14 percent slopes.

Water moves at a moderate rate through the surface layer of these soils but moves slowly through the subsoil. The available water-holding capacity is medium. The soils contain a moderately small amount of organic matter, but their natural fertility is moderately high. They are medium acid.

Use and management.—These soils have a total area of about 850 acres in the county. Of this acreage, about 58 percent is wooded, 33 percent is in crops, 6 percent is in pasture, and 3 percent is idle or in other uses.

The soils of this unit are suited to only a narrow range of crops. Small grains, lespedeza, clovers, and grasses are well suited. Corn produces poor yields, and tobacco and alfalfa are not suitable. Because they are highly erodible, these soils ought to be kept in close-growing

vegetation, or in crops that need only minimum tillage most of the time. Examples of suitable cropping systems are:

1. First year, small grain and fescue followed by overseeding of lespedeza; second, third, and fourth years, fescue and lespedeza.
2. First year, corn or milo followed by small grain and fescue; second year, harvest grain and allow fescue to grow; third and fourth years, fescue.

Phosphate and potash are required for satisfactory yields of all crops, including grasses and legumes, and nitrogen is needed for nonlegumes. Soil tests should be made to determine the amounts needed. Most grasses and legumes respond well to moderate applications of lime.

In areas that are slightly eroded, the tilth of these soils is good. Where much of the original surface layer has been removed through erosion, however, or where the plastic clay subsoil is exposed, good tilth is very difficult to maintain. In the moderately eroded areas, the plow layer remains wet for long periods in cool, rainy seasons. Crop residues worked into the soil and sod crops grown in the cropping system will improve tilth, increase the rate of water movement in the subsoil, and help control runoff.

Other suggested measures in a program of conservation farming are contour cultivation and contour stripcropping. The soils are not suited to terraces. Depressions and draws should be kept in sod.

CAPABILITY UNIT IVe-4

Strongly sloping soils that are shallow or stony: These soils on uplands are well drained and slightly eroded. The surface layer is very friable sandy loam, 8 to 18 inches thick. The soils in the unit are:

Halewood stony sandy loam, 10 to 14 percent slopes.
Louisburg coarse sandy loam, 7 to 14 percent slopes.
Wilkes sandy loams, 10 to 14 percent slopes.

In most areas the Louisburg and Wilkes soils lack a well-defined subsoil, and the surface layer is underlain directly by weathered rock. In many places hard rock occurs within 24 inches of the surface. The Halewood soil has a friable clay loam subsoil, 18 to 24 inches thick.

Infiltration of water and permeability are moderate to moderately rapid. The capacity to supply water to plants is low to medium. The soils contain a small to moderately small amount of organic matter and available plant nutrients, and they are strongly acid to medium acid.

Use and management.—These soils have a total area of 1,240 acres in the county. Of this acreage, about 71 percent is wooded, 21 percent is in crops, 6 percent is in pasture, and 2 percent is idle or in other uses.

These soils are suited to only a few kinds of crops. They are fairly well suited to tobacco, small grains, clover, lespedeza, and grasses. Because organic matter is used up rapidly, these soils should be cultivated in a cropping system providing large amounts of crop residues. The added organic matter helps to increase crop yields and to control erosion. Suitable cropping systems are:

1. First year, small grain and fescue overseeded with lespedeza; second, third, and fourth year, fescue and lespedeza.
2. First year, tobacco followed by small grain and fescue; second year, harvest grain and allow fescue to grow; third and fourth year, fescue.

For satisfactory yields of all crops, these soils require additions of nitrogen, phosphate, and potash. Soil tests should be made to determine the amounts needed.

The soils in this group are easy to work. They can be tilled within a wide range of moisture content but are susceptible to erosion. If they are cultivated, the loss of soil can be reduced by management that provides a long cropping system, as well as contour tillage, diversion terraces, and contour stripcropping. In most places the soils are not suited to terracing. Depressions, draws, and critical slopes ought to be maintained in permanent sod.

CAPABILITY UNIT IVe-5

Sloping to strongly sloping, moderately fine textured soils that are severely eroded: In this unit are deep, well-drained soils on uplands. The surface layer is red, sticky clay loam. The subsoil is firm, red clay. The soils in the unit are:

Cecil clay loam, 7 to 10 percent slopes, severely eroded.
Cecil clay loam, 10 to 14 percent slopes, severely eroded.
Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded.
Lloyd clay loam, 10 to 14 percent slopes, severely eroded.
Moderately gullied land, rolling.

Infiltration of water is very slow in compacted areas and is moderately slow in sodded areas. Permeability is moderate. The available moisture-holding capacity is high to medium. These soils contain a small amount of organic matter and are moderately low to moderate in natural fertility. They are medium acid.

Use and management.—The total area of these soils in the county is about 4,500 acres. Of this acreage, about 72 percent is wooded, 17 percent is in crops, 7 percent is in pasture, and 4 percent is idle.

These soils are suited to only a few kinds of crops. They are fairly well suited to small grains, lespedeza, alfalfa, and grasses. They are poorly suited to corn and tobacco. Because of their low productivity, poor tilth, and the difficulty of controlling erosion, these soils ought to be in sod crops most of the time. Suitable cropping systems are:

1. First year, small grain and fescue overseeded with lespedeza; second and third year, fescue and lespedeza.
2. First year, small grain followed by soybeans or cowpeas; alfalfa and orchardgrass for 4 years.

In amounts determined by soil tests, add phosphate and potash to soils planted to most crops, and add nitrogen for nonlegumes. Liming these soils is beneficial for most crops, and boron is needed to maintain productive stands of alfalfa.

Crops are difficult to establish and maintain because these soils are in very poor tilth, can be worked in only a narrow range of moisture content, and heave and crust. They need practices to maintain their content of organic matter. Turn under crop residues and compost to improve tilth and increase crop yields.

Stripcropping on the contour is an effective means of controlling surface runoff. All waterways require a permanent sod to prevent erosion caused by surface runoff.

CAPABILITY UNIT IVw-1

Poorly drained soils on flood plains, subject to frequent overflow: These soils have a friable fine sandy loam or silt loam surface layer that is underlain by stratified clay loam, loam, and fine sand. The water table is generally within 12 inches of the surface. The soils of the unit are:

Mixed alluvial land, poorly drained.
Wehadkee loams.

Infiltration of water is moderate, and permeability is moderately slow. The capacity to supply moisture to plants is high. These soils contain a moderate amount of organic matter and a moderately small supply of plant nutrients. They are strongly acid.

Use and management.—These soils have a total area of about 1,150 acres in the county. About 45 percent of this acreage is in pasture, 32 percent is wooded, 21 percent is in crops, and 2 percent is idle or in other uses.

Before these soils can be used for crops, they should be drained by tile or open ditches. Even where drained, however, the risk of damage by flood is high and only a few kinds of crops can be grown. These crops are corn, small grains, lespedeza, and some clovers and grasses for pasture. Suitable cropping systems are:

1. First year, corn followed by small grain and fescue; second year, overseed with lespedeza or ladino clover, harvest grain, and allow fescue to grow; third year, fescue and a legume.
2. First year, corn followed by winter clover; second year, corn followed by small grain and fescue; third year, harvest grain and allow fescue to grow; fourth year, fescue.

These soils should be tested to determine the amounts of nitrogen, phosphate, and potash needed for specific crops. Apply lime if grasses, legumes, and some other crops are grown.

Although these soils are in fairly good tilth, tilth can be improved and maintained and infiltration can be increased if the content of organic matter is brought to a high level. Because flooding is frequent, outlets for tile drains are difficult to keep open.

CAPABILITY UNIT IVw-2

Poorly drained soils in upland depressions: The only soil in this unit, Worsham fine sandy loam, 0 to 7 percent slopes, is in depressions and low areas along small streams. The friable surface layer is 5 to 10 inches thick. The subsoil is firm silty clay or clay.

Infiltration of water is moderate, and permeability is moderately slow. The available moisture-holding capacity is medium. Natural fertility is low, and the supply of organic matter is moderately small. Reaction is strongly acid. Areas of this soil are excessively wet because of seepage from uplands.

Use and management.—The total area of this soil in the county is about 1,500 acres. About 43 percent of the acreage is in pasture, 36 percent is wooded, 18 percent is in crops, and 3 percent is idle or in other uses.

If it is drained, this soil is fairly well suited to corn, small grains, lespedeza, and grasses and legumes for pasture. To maintain the content of organic matter, the cropping system should provide for the return of crop residues to the soil. Suitable cropping systems are:

1. First year, corn followed by small grain and fescue; second year, overseed with lespedeza or ladino clover, harvest grain, and allow fescue to grow; third and fourth year, fescue and a legume.
2. First year, corn followed by small grain; second year, overseed with lespedeza and harvest grain; third year, lespedeza.

This soil responds well to nitrogen, and to phosphate and potash added in amounts indicated by soil tests. Lime is needed for most crops. Although this soil is in poor tilth, tilth can be improved and permeability increased by plowing crop residues and cover crops into the soil.

This soil can be drained by open ditches or tile. Seepage water from the adjacent upland should be intercepted by ditches. Diversions and contour cultivation are effective in reducing soil losses.

CAPABILITY UNIT IVs-1

Coarse-textured, excessively drained soils of low fertility, on flood plains: Buncombe sand is the only soil in this unit. It is deep and has a surface layer more than 24 inches thick that is underlain by stratified layers of silt, coarse sand, and gravel.

Water enters and passes through this soil rapidly. The capacity of the soil to supply moisture to plants is low. Natural fertility and the content of organic matter are also low. Reaction is strongly acid.

Use and management.—This soil has a total area of about 700 acres in the county. About 42 percent of the acreage is in crops, 30 percent is wooded, 14 percent is in pasture, and 14 percent is idle.

Because it is droughty, this soil is not well suited to any crop. Sericea lespedeza and common lespedeza are fairly suitable. When fall and spring are rainy, small grains grow well. Suitable cropping systems are:

1. First year, small grain; sericea lespedeza for 4 years.
2. First year, small grain followed by common lespedeza; second year, common lespedeza.

All crops grown on this soil require additions of nitrogen, phosphate, and potash. Soil tests should be made to determine the amounts needed. Fertilizers should be added in moderate amounts several times during the growing season instead of in a single large amount. Because organic matter is used up rapidly, apply large amounts of crop residue or other organic material each year.

This soil is in excellent tilth and can be cultivated when wet or dry. Though it is flooded at times, crops are not damaged greatly. When rainfall is average, however, crops are damaged by drought, and in dry periods they may fail completely.

CAPABILITY UNIT VIe-1

Steep, moderately coarse to medium textured soils: These are deep to moderately deep, well-drained, and slightly eroded to moderately eroded soils on uplands. The surface layer is a friable fine sandy loam, loam, or silt loam, 3 to 8 inches thick. Some areas are gravelly and stony. The subsoil is yellowish-red to red, firm to friable clay loam or clay. The soils in the unit are:

Figure 7.—**Peach orchard on the contour on Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded.**

Appling fine sandy loam, 14 to 25 percent slopes.
Appling fine sandy loam, 14 to 25 percent slopes, eroded.
Cecil fine sandy loam, 14 to 25 percent slopes.
Cecil fine sandy loam, 14 to 25 percent slopes, eroded.
Cecil gravelly fine sandy loam, 14 to 25 percent slopes.
Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded.
Georgeville silt loam, 10 to 25 percent slopes.
Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes.
Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded.
Lloyd loam, 14 to 25 percent slopes.
Lloyd loam, 14 to 25 percent slopes, eroded.
Madison fine sandy loam, 14 to 25 percent slopes.
Madison gravelly fine sandy loam, 14 to 25 percent slopes.
Mayodan fine sandy loam, 14 to 40 percent slopes.
Mecklenburg loam, 14 to 25 percent slopes, eroded.
Wadesboro fine sandy loam, 14 to 30 percent slopes.

Infiltration of water and permeability are moderate to moderately slow. The available moisture-holding capacity is medium to high. These soils are moderately low to low in organic matter and in natural fertility. They are strongly acid.

Use and management.—These soils have a total area of about 25,300 acres in the county. Of this acreage, about 77 percent is wooded, 12 percent is in crops, 9 percent is in pasture, and 2 percent is idle or in other uses.

These soils are generally not suited to cultivated crops. They are fairly well suited to pasture of grasses and legumes and to trees (fig. 7). Good pasture requires annual applications of nitrogen, phosphate, and potash, and applications of lime at longer intervals. Renewing pasture in alternate strips aids in reducing soil losses caused by erosion. Controlled grazing is important in order to avoid weakening the sod. Figure 8 shows a field in pasture.

CAPABILITY UNIT VIe-2

Steep, severely eroded, moderately fine textured soils that absorb water slowly: These are moderately deep, well-drained soils on uplands. The surface layer is red, firm clay loam. The subsoil is red, firm clay or clay loam. The soils in this unit are:

Cecil clay loam, 14 to 25 percent slopes, severely eroded.
Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded.
Lloyd clay loam, 14 to 25 percent slopes, severely eroded.

Infiltration of water is very slow in firmly compacted areas and is moderately slow in less compacted areas where a good sod has been established. The available moisture-holding capacity is high. These soils are low in organic matter and are moderate to moderately low in natural fertility. They are medium acid.

Use and management.—These soils have a total area of about 3,000 acres in the county. About 74 percent of the acreage is wooded, 10 percent is in pasture, 8 percent is in crops, and 8 percent is idle or in other uses.

These soils are not suited to cultivated crops. They are fairly well suited to pine trees and to the grasses and legumes ordinarily grown for pasture. Pasture should be limed and adequately fertilized with nitrogen, phosphate, and potash.

Grasses and legumes are difficult to establish because these soils are in poor tilth, heave badly in winter, and after wetting, crust when they dry. Control grazing, and remove livestock from pasture in wet periods. Enough cover should be maintained on these soils to protect them in winter.

CAPABILITY UNIT VIe-3

Steep, moderately coarse textured soils that are shallow or stony: These are well-drained soils on uplands. They have a very friable surface layer of sandy loam. The soils in the unit are:

Halewood stony sandy loam, 14 to 25 percent slopes.
Iredell fine sandy loam, 10 to 14 percent slopes, eroded.
Louisburg coarse sandy loam, 14 to 25 percent slopes.
Wilkes sandy loams, 14 to 25 percent slopes.

Infiltration of water is moderate to moderately rapid, and permeability is moderately rapid to slow. The available moisture-holding capacity is low to medium. The soils contain a moderately small amount of organic mat-

Figure 8.—**Pasture of tall fescue and ladino clover on Cecil fine sandy loam, 14 to 25 percent slopes.**

ter and a small to moderately large supply of available plant nutrients. They are strongly acid to slightly acid.

Use and management. These soils have a total area of about 4,000 acres in the county. Of this acreage, about 82 percent is wooded, 8 percent is in pasture, 6 percent is in crops, and 4 percent is idle or in other uses.

These soils are generally not suited to cultivated crops but are suited to pasture and trees. To establish and maintain grasses and legumes in pasture, add nitrogen, phosphate, and potash in amounts indicated by soil tests. In summer when rainfall is scarce, pasture is damaged and yields are low. Control grazing so that the pasture is not damaged in dry periods and is protected by a full cover in winter. These soils are suited to pine trees, but yields are likely to be low.

CAPABILITY UNIT VIIe-1

Very steep, moderately deep soils that are slightly to moderately eroded: In this unit are well-drained soils that have rapid runoff and are highly susceptible to erosion. These soils are on uplands. The surface layer is friable to very friable sandy loam or loam. The subsoil is reddish clay or clay loam. The soils in the unit are:

Appling fine sandy loam, 25 to 45 percent slopes.
Cecil fine sandy loam, 25 to 40 percent slopes.
Cecil fine sandy loam, 25 to 40 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes.
Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded.
Lloyd loam, 25 to 40 percent slopes.
Madison gravelly fine sandy loam, 25 to 40 percent slopes.

Water enters and passes through these soils at a moderate rate. The available moisture-holding capacity is medium. These soils are low in organic matter and are moderately low in natural fertility. They are medium acid to strongly acid.

Use and management. –The soils in this group have a total area of about 10,800 acres in the county. About 85 percent of the acreage is wooded, 7 percent is in pasture, 4 percent is in crops, and 4 percent is idle.

Strong slopes make these soils unsuited to cultivated crops or to pasture. They are useful only as woodland. Although yields will probably be low, these soils ought to be planted to or kept in trees.

CAPABILITY UNIT VIIe-2

Soils that are steep and very shallow, or very steep and severely eroded: These soils have rapid runoff and are extremely susceptible to erosion. They have varied profile characteristics. The soils of the unit are:

Cecil clay loam, 25 to 40 percent slopes, severely eroded.
Halewood stony sandy loam, 25 to 40 percent slopes.
Louisburg coarse sandy loam, 25 to 50 percent slopes.
Moderately gullied land, hilly.
Severely gullied land.
Wilkes sandy loams, 2 to 10 percent slopes, severely eroded.
Wilkes sandy loams, 10 to 25 percent slopes, severely eroded.
Wilkes sandy loams, 25 to 50 percent slopes.

Use and management. –There are about 6,200 acres of these soils in the county. Of this acreage, about 81 percent is wooded, 11 percent is in pasture, 5 percent is in crops, and 3 percent is idle.

These soils are not suited to cultivated crops or to pasture. They are of little agricultural use except as woodland or wildlife areas. They are suited to pines, but these trees do poorly. Some areas are suited to kudzu and shrubs.

Estimated Yields

Table 1 lists the estimated average acre yields for the principal crops grown in the county. The estimates are listed by soils at two levels of management. In columns A are yields to be expected under the management generally practiced in the county, and in columns B are yields to be expected under improved management.

In general, yields in columns B are notably higher than those in columns A. For some crops, however, especially those of high value, the yields in columns A differ little from those in columns B. This is because the prevailing, or average, management is at a level about as high as is thought feasible.

The estimates are for unirrigated crops grown in seasons of normal rainfall, which are seasons that do not have more than 15 days of drought. If drought lasts for 20 to 30 days, yields of most crops are likely to be reduced. On steep or shallow soils, prolonged dry spells may reduce yields by as much as one third. On deep, nearly level to gently sloping soils that have a high available water-holding capacity, crops are less affected by drought. The yields of wheat, oats, the first cutting of alfalfa, and a few other crops, vary little from year to year because generally enough moisture from rains in winter is added to the soils to meet the needs of these crops.

Farmers in the county who are obtaining yields as high as those given in columns B are practicing good soil management. This management provides:

1. Proper selection of crops and cropping systems.
2. Preparation of a good seedbed.
3. Additions of commercial fertilizer, lime, and other amendments according to the results of soil tests.
4. Maintenance of organic matter at a high level by using crop residues, barnyard manure, or a sod crop, singly or in combination.
5. Conservation of soil, plant nutrients, and moisture.
6. Control of harmful insects, crop diseases, and weeds.

The management varies according to the soils, but all of these practices ought to be followed if the yields in columns B are to be obtained. A farmer might follow all practices, except the control of insects, for example, and still obtain yields comparable to those obtained under the management generally used in the county. Failure to control insects would offset the other desirable practices.

For permanent pasture, yields are given in the number of days that one acre will provide grazing for one animal unit, without injury to the pasture, during a year. An animal unit is roughly one cow, one horse, five swine, seven sheep, or seven goats.

Improved management of pasture requires all of the foregoing practices and also requires the control of grazing. Under improved management the organic-matter content of soils in pasture is maintained by the roots of the pasture plants.

TABLE 1.—*Estimated average yields per acre of the principal crops under two levels of management*

[Dashed lines indicate crop is not commonly grown or soil is not well suited to it under management specified]

Soil	Tobacco		Corn		Wheat		Oats		Lespedeza [1]		Alfalfa [2]		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [3]	*Cow-acre-days* [3]
Altavista fine sandy loam, 0 to 2 percent slopes			48	80	27	40	48	72	1.1	1.8			175	215
Altavista fine sandy loam, 2 to 7 percent slopes	1,600	1,800	48	80	27	40	48	72	1.1	1.4	2.4	3.2	175	215
Altavista fine sandy loam, 7 to 10 percent slopes	1,400	1,600	32	64	22	40	40	72	1.2	1.8	2.4	3.2	100	175
Appling fine sandy loam, 2 to 7 percent slopes	1,600	1,800	32	64	27	36	48	64	1.2	1.6	2.0	2.8	100	175
Appling fine sandy loam, 2 to 7 percent slopes, eroded	1,400	1,800	24	56	22	32	40	56	1.0	1.4	1.6	2.4	80	145
Appling fine sandy loam, 7 to 10 percent slopes	1,600	1,800	32	64	22	36	40	64	1.0	1.6	2.0	2.8	100	175
Appling fine sandy loam, 7 to 10 percent slopes, eroded	1,400	1,600	24	56	18	32	32	56	.8	1.4	1.6	2.4	80	145
Appling fine sandy loam, 10 to 14 percent slopes	1,400	1,800	24	56	18	32	32	56	.8	1.4	1.6	2.4	80	145
Appling fine sandy loam, 10 to 14 percent slopes, eroded	1,200	1,600	16	48	13	27	24	48	.6	1.2	1.2	2.0	60	105
Appling fine sandy loam, 14 to 25 percent slopes													60	120
Appling fine sandy loam, 14 to 25 percent slopes, eroded													55	100
Appling fine sandy loam, 25 to 45 percent slopes														
Augusta silt loam [4]			48	80	[5] 27	36	[5] 48	64	[5] 1.2	1.6			175	215
Buncombe loamy sand	800	1,200	16	48	[6] 18	27	[5] 32	48	[6] 1.0	1.6			50	90
Buncombe sand														
Cecil clay loam, 2 to 7 percent slopes, severely eroded			16	40	9	22	16	40	.4	.8			50	90
Cecil clay loam, 7 to 10 percent slopes, severely eroded			16	40	9	18	16	32	.4	.8			50	90
Cecil clay loam, 10 to 14 percent slopes, severely eroded														
Cecil clay loam, 14 to 25 percent slopes, severely eroded														
Cecil clay loam, 25 to 40 percent slopes, severely eroded														
Cecil fine sandy loam, 2 to 7 percent slopes	1,600	2,000	40	72	27	40	48	72	1.2	1.8	3.2	4.0	120	200
Cecil fine sandy loam, 2 to 7 percent slopes, eroded	1,400	1,800	32	64	22	32	40	56	1.0	1.4	2.4	3.2	100	175
Cecil fine sandy loam, 7 to 10 percent slopes	1,600	2,000	40	72	27	40	48	72	1.2	1.8	2.8	3.6	120	200
Cecil fine sandy loam, 7 to 10 percent slopes, eroded	1,400	1,800	32	64	18	32	32	56	1.4	1.8	2.0	2.8	100	175
Cecil fine sandy loam, 10 to 14 percent slopes	1,400	1,800	32	64	22	36	40	64	1.0	1.6	2.4	3.2	100	175
Cecil fine sandy loam, 10 to 14 percent slopes, eroded	1,200	1,600	24	56	9	27	16	48	1.2	1.4	1.6	2.4	75	145
Cecil fine sandy loam, 14 to 25 percent slopes													75	145
Cecil fine sandy loam, 14 to 25 percent slopes, eroded													55	100
Cecil fine sandy loam, 25 to 40 percent slopes														
Cecil fine sandy loam, 25 to 40 percent slopes, eroded														
Cecil loam, 2 to 7 percent slopes, eroded	1,400	1,800	32	64	27	40	48	64	1.2	1.8	3.2	4.0	100	175
Cecil loam, 7 to 10 percent slopes	1,600	2,000	40	72	22	36	40	72	1.2	1.8	2.8	3.6	120	200
Cecil gravelly fine sandy loam, 2 to 7 percent slopes	1,600	2,000	40	72	27	40	48	72	1.2	1.8	3.2	4.0	120	200
Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded	1,400	1,800	24	64	22	32	40	56	1.0	1.4	2.4	3.2	100	175
Cecil gravelly fine sandy loam, 7 to 10 percent slopes	1,600	2,000	40	72	27	40	48	72	1.2	1.8	2.8	3.6	120	200
Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded	1,400	1,800	32	64	18	32	32	56	1.4	1.8	2.0	2.8	100	175
Cecil gravelly fine sandy loam, 10 to 14 percent slopes	1,400	1,800	32	64	22	36	40	64	1.0	1.6	2.4	3.2	100	175
Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded	1,200	1,600	24	56	9	27	16	48	.4	1.2	1.6	2.4	75	145
Cecil gravelly fine sandy loam, 14 to 25 percent slopes													75	145

See footnotes at end of table.

TABLE 1.—*Estimated average yields per acre of the principal crops under two levels of management* Continued

[Dashed lines indicate crop is not commonly grown or soil is not well suited to it under management specified]

Soil	Tobacco		Corn		Wheat		Oats		Lespedeza [1]		Alfalfa [2]		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [3]	*Cow-acre-days* [3]
Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded													55	100
Chewacla silt loam [4] [6]			56	80	[5] 27	36	[5] 48	64	[5] 1.2	1.6			200	245
Congaree fine sandy loam [6]	1,400	1,600	40	72	[5] 27	40	[5] 48	72	[5] 1.2	1.8			175	215
Congaree silt loam [5]			48	80	[5] 27	40	[5] 48	72	[5] 1.2	1.8			200	245
Davidson clay loam, 2 to 7 percent slopes, eroded			32	64	27	36	48	64	1.2	1.6	3.2	4.0	100	175
Davidson clay loam, 7 to 10 percent slopes, eroded			32	64	18	36	32	64	.8	1.4	2.4	3.2	75	145
Georgeville silt loam, 2 to 10 percent slopes, eroded	1,200	1,400	24	56	13	32	24	56	.8	1.2	1.6	2.4	75	145
Georgeville silt loam, 10 to 25 percent slopes													75	120
Halewood stony sandy loam, 7 to 10 percent slopes	1,000	1,400	16	40	13	27	24	48	.6	1.2	1.6	2.4	75	145
Halewood stony sandy loam, 10 to 14 percent slopes	1,000	1,200	16	40	9	22	16	40	.4	1.0	1.2	2.0	75	175
Halewood stony sandy loam, 14 to 25 percent slopes													50	90
Halewood stony sandy loam, 25 to 40 percent slopes														
Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded			16	40	9	18	16	32	.4	.8			50	90
Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded														
Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded	1,400	1,600	32	64	18	32	32	56	.8	1.4	2.0	2.8	135	175
Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded	1,400	1,600	24	56	13	27	24	48	.6	1.2	1.6	2.4	75	145
Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes													100	175
Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded													65	120
Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes														
Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded														
Hiwassee loam, 2 to 7 percent slopes, eroded			40	72	27	40	48	72	1.4	2.0	3.2	4.0	120	200
Iredell fine sandy loam, 2 to 7 percent slopes			24	56	13	32	24	56	.6	1.4			75	145
Iredell fine sandy loam, 2 to 7 percent slopes, eroded			8	24	9	18	16	32	.4	.8			55	90
Iredell fine sandy loam, 7 to 10 percent slopes			16	48	9	27	16	18	.6	1.2			60	120
Iredell fine sandy loam, 7 to 10 percent slopes, eroded			8	24	5	13	8	24	.2	.8			50	75
Iredell fine sandy loam, 10 to 14 percent slopes													50	120
Iredell fine sandy loam, 10 to 14 percent slopes, eroded														
Lloyd clay loam, 2 to 10 percent slopes, severely eroded			16	48	9	27	16	48	.4	.8			50	100
Lloyd clay loam, 10 to 14 percent slopes, severely eroded													50	90
Lloyd clay loam, 14 to 25 percent slopes, severely eroded														
Lloyd loam, 2 to 7 percent slopes			40	72	27	40	48	72	1.4	2.0	3.2	4.0	120	200
Lloyd loam, 2 to 7 percent slopes, eroded			32	64	27	36	48	64	1.2	1.6	2.4	3.2	100	175
Lloyd loam, 7 to 10 percent slopes			40	72	22	40	40	72	1.2	1.8	2.8	3.6	100	175
Lloyd loam, 7 to 10 percent slopes, eroded			32	64	18	36	32	64	.8	1.4	2.0	2.8	75	145
Lloyd loam, 10 to 14 percent slopes			32	64	18	36	32	64	.8	1.6	2.4	3.2	75	145
Lloyd loam, 10 to 14 percent slopes, eroded			24	56	13	32	24	56	.6	1.2	1.6	2.4	65	120
Lloyd loam, 14 to 25 percent slopes													65	115
Lloyd loam, 14 to 25 percent slopes, eroded													55	100
Lloyd loam, 25 to 40 percent slopes														
Local alluvial land	1,800	2,000	48	80	32	45	56	80	1.2	1.6	2.4	3.2	50	215
Louisburg coarse sandy loam, 7 to 14 percent slopes	1,200	1,400	16	40	9	22	16	40	.4	1.0				
Louisburg coarse sandy loam, 14 to 25 percent slopes													50	90

See footnotes at end of table.

TABLE 1. *–Estimated average yields per acre of the principal crops under two levels of management*–Continued

[Dashed lines indicate crop is not commonly grown or soil is not well suited to it under management specified]

Soil	Tobacco		Corn		Wheat		Oats		Lespedeza [1]		Alfalfa [2]		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [3]	*Cow-acre-days* [3]
Louisburg coarse sandy loam, 25 to 50 percent slopes														
Madison fine sandy loam, 2 to 7 percent slopes	1,400	1,800	32	64	27	36	48	64	1.2	1.6	2.4	3.2	120	200
Madison fine sandy loam, 2 to 7 percent slopes, eroded	1,400	1,800	32	64	27	36	48	64	1.2	1.6	2.4	3.2	120	200
Madison fine sandy loam, 7 to 10 percent slopes	1,400	1,800	32	64	18	36	32	64	1.0	1.6	2.4	3.2	100	175
Madison fine sandy loam, 7 to 10 percent slopes, eroded	1,200	1,600	24	56	13	32	24	56	.8	1.4	1.6	2.4	75	145
Madison fine sandy loam, 10 to 14 percent slopes	1,400	1,600	24	56	22	32	40	56	1.0	1.4	2.0	2.8	75	145
Madison fine sandy loam, 10 to 14 percent slopes, eroded	1,200	1,400	16	48	13	27	24	48	.6	1.2	1.2	2.0	55	100
Madison fine sandy loam, 14 to 25 percent slopes													55	100
Madison gravelly fine sandy loam, 7 to 10 percent slopes	1,400	1,800	32	64	22	36	40	64	1.0	1.6	2.4	3.2	100	175
Madison gravelly fine sandy loam, 10 to 14 percent slopes	1,400	1,600	24	56	22	32	40	56	1.0	1.4	2.0	2.8	80	145
Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded	1,200	1,400	16	48	13	27	24	48	.6	1.2	1.2	2.0	55	90
Madison gravelly fine sandy loam, 14 to 25 percent slopes													55	90
Madison gravelly fine sandy loam, 25 to 40 percent slopes														
Mayodan fine sandy loam, 2 to 7 percent slopes	1,600	1,800	32	64	27	36	48	64	1.2	1.6	2.0	2.8	100	175
Mayodan fine sandy loam, 2 to 7 percent slopes, eroded	1,400	1,600	24	56	22	32	40	56	1.0	1.4	1.6	2.4	80	145
Mayodan fine sandy loam, 7 to 10 percent slopes	1,600	1,800	32	64	22	36	40	64	1.0	1.6	2.0	2.8	100	175
Mayodan fine sandy loam, 7 to 10 percent slopes, eroded	1,400	1,600	24	56	18	32	32	56	.8	1.4	1.6	2.4	80	145
Mayodan fine sandy loam, 10 to 14 percent slopes	1,400	1,600	24	56	18	32	32	56	.8	1.4	1.6	2.4	80	145
Mayodan fine sandy loam, 10 to 14 percent slopes, eroded	1,200	1,400	16	48	13	27	24	48	.6	1.2	1.2	2.0	60	105
Mayodan fine sandy loam, 14 to 40 percent slopes														
Mecklenburg loam, 2 to 7 percent slopes, eroded			24	56	18	27	32	48	.8	1.4	1.6	2.0	80	145
Mecklenburg loam, 7 to 14 percent slopes, eroded			16	48	13	22	24	40	.6	1.2	1.6	2.4	75	120
Mecklenburg loam, 14 to 25 percent slopes, eroded													50	100
Mixed alluvial land, poorly drained [4]			8	16									50	120
Mixed alluvial land, well drained [6]			40	72	[5] 18	36	[5] 32	64	[5] .8	1.6			175	215
Moderately gullied land, rolling			8	24	5	13	8	24	.2	.6			50	90
Moderately gullied land, hilly														
Severely gullied land														
Starr loam, 0 to 7 percent slopes			48	80	32	45	56	80	1.4	2.0	3.2	4.0	145	215
State fine sandy loam	1,600	1,800	40	72	27	40	48	72	1.4	2.0	2.4	3.2	145	215
Wadesboro fine sandy loam, 2 to 7 percent slopes	1,400	1,600	32	64	27	36	48	64	1.2	1.6	2.8	3.6	100	175
Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded	1,000	1,200	24	56	22	32	40	56	1.0	1.4	1.6	2.4	80	145
Wadesboro fine sandy loam, 7 to 10 percent slopes	1,400	1,600	32	64	22	36	40	64	1.0	1.6	2.0	2.8	100	175
Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded	1,000	1,200	24	56	18	32	32	56	.8	1.4	1.6	2.4	80	145
Wadesboro fine sandy loam, 10 to 14 percent slopes	1,400	1,600	24	56	18	32	32	56	.8	1.4	2.0	2.8	80	145
Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded	1,000	1,200	16	48	13	27	24	48	.6	1.2	1.2	2.0	60	105
Wadesboro fine sandy loam, 14 to 30 percent slopes														

See footnotes at end of table.

TABLE 1.—*Estimated average yields per acre of the principal crops under two levels of management*—Continued

[Dashed lines indicate crop is not commonly grown or soil is not well suited to it under management specified]

Soil	Tobacco		Corn		Wheat		Oats		Lespedeza [1]		Alfalfa [2]		Permanent pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Lb.	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [3]	*Cow-acre-days* [3]
Wehadkee loams [4]	-		8	32	---	---		-	---	---	---	---	55	120
Wickham fine sandy loam, 2 to 7 percent slopes, eroded	1,200	1,400	40	72	27	36	48	64	1.2	1.6	2.4	3.2	120	200
Wickham fine sandy loam, 7 to 14 percent slopes, eroded	1,000	1,200	32	64	18	32	32	56	.8	1.4	2.0	2.8	100	175
Wilkes sandy loams, 2 to 10 percent slopes	1,000	1,400	8	32	9	18	16	32	.4	.8		---	60	90
Wilkes sandy loams, 2 to 10 percent slopes, severely eroded														
Wilkes sandy loams, 10 to 14 percent slopes	1,000	1,200	8	24	5	13	8	24	.2	.8			55	90
Wilkes sandy loams, 10 to 25 percent slopes, severely eroded	-		---	---	---	---	---	---	---	---	---		---	---
Wilkes sandy loams, 14 to 25 percent slopes														
Wilkes sandy loams, 25 to 50 percent slopes														
Worsham fine sandy loam, 0 to 7 percent slopes [4]			8	24									100	145

[1] Yields based on one cutting late in summer.
[2] Yields based on three cuttings.
[3] Number of days 1 acre will provide grazing for 1 animal unit, without injury to pasture, during the year.
[4] Artificial drainage is required in many places.
[5] Crop is not commonly grown on this soil, but soil is suited to it.
[6] May be flooded every 4 or 5 years.

Use and Management of Woodland

Woodland makes up about half of Yadkin County. A thick stand of trees is on the tip of the Brushy Mountains near Jonesville, and the rest of the woodland is well distributed through the county in small, irregularly shaped areas. All of the woodland in the county is privately owned.

Most of the soils are well suited to trees. The soils poorly suited to trees are in an area southwest of Huntsville and in another area southwest of East Bend and east of Flint Hill. Severely eroded soils, wherever they occur, produce low yields of wood products.

According to long-range predictions made by the U.S. Department of Agriculture, the woodland in Yadkin County is likely to increase. A small acreage now in trees is expected to be cleared and cultivated. A larger acreage, because it is unsuited to farming with large, modern implements, will probably be returned to trees. Thus, the importance of woodland management is likely to increase.

Forest Types

The present forest types, or combinations of species, can be classified as: (1) shortleaf pine, (2) Virginia pine, (3) shortleaf pine-Virginia pine, (4) white oak-red oak-hickory, and (5) white pine hardwoods. Shortleaf pine and Virginia pine, either in pure stands or in mixtures, have reseeded abandoned fields. The principal associated tree species are dogwood, sourwood, blackgum, red maple, and oak. Lesser vegetation such as sumac, smilax, Virginia creeper, and honeysuckle is usually present. In the white oak-red oak-hickory type, red oak and hickory are the principal trees remaining because the white oak trees have been cut. The white pine-hardwoods type is largely on the cool north slopes of the Brushy Mountains and on the soils that slope northward to the Yadkin River along the northern boundary of the county.

Management of Woodland

In the following pages are discussed the planting of trees; the protection of trees from grazing, fire, insects, and disease; and other practices of woodland management, including the management of soils to assist the natural seeding of woodland.

Planting of trees.—Trees are planted in some inaccessible or low-producing areas that were once cultivated but now cannot be profitably cultivated with modern farm equipment. Although it is not a native species, loblolly pine grows well in this county and is planted in more abandoned fields than is shortleaf pine. Shortleaf pine is a desirable native tree, but it is susceptible to little-leaf disease.

The spacing between seedlings depends on how well the soil is suited to trees and on the kind of wood products desired. A spacing of 6 by 7 feet is generally used. The trees should be planted late in winter when soil moisture is adequate and the chance of damage from frost heaving is slight.

Protection from grazing.—Wooded areas ought to be protected from heavy grazing, for heavy grazing not only damages trees and destroys seedlings but also makes the soil more likely to erode and less likely to take in and store enough water for the trees. Because much of the forested land in Yadkin County is steep or eroded, grazing may be particularly harmful if it is not controlled. Where some grazing on woodland is necessary, the live-

Figure 9.—Stand of pines after thinning on Cecil clay loam, 7 to 10 percent slopes, severely eroded.

stock should be distributed so that not more than 40 percent of the low-growing cover is eaten. Grazing is less harmful to woodland in April, May, and June than it is at other times of the year because more forage is available during those months. Cattle generally damage trees less than other grazing animals.

Protection from fire.—Fire kills seedlings, young trees, and some of the larger trees. It also destroys humus and litter and thereby increases the hazard of erosion. Firebreaks help protect wooded areas by checking or stopping fires. A firebreak may be a road in the woods, or a plowed or disked fire lane. At a firebreak, fire fighters can start a backfire, which is a fire set to counter an advancing fire. Firebreaks should tie into streams, ponds, public roads, utility rights-of-way, or other barriers.

Protection from insects and disease.—Because the wooded areas in the county are generally small and scattered, serious losses from disease and insects are not likely. To avoid damage from insects, cuttings should be made in fall or winter. Log the woodland with care so that the trees left standing are not scarred and made more susceptible to disease.

Woodland weeding.—Vines, shrubs, and trees of poor form and of undesirable species should be killed or removed so that they do not compete with crop trees for water and plant nutrients. The unwanted hardwoods and shrubs can be killed by girdling, by frilling or injecting with chemicals, or by spraying the trunk or foliage. They can also be cut or disked.

Intermediate cutting.—This is a method of harvesting in which salable trees are removed from a fully stocked or crowded stand so that the remaining trees are not crowded and can grow freely until the stand is again fully stocked and ready for another intermediate cutting. If trees are harvested by intermediate cuttings instead of by clean cuttings, a good stand is kept on the woodland and soil, water, and the trees themselves are conserved (fig. 9). Intermediate cuttings are made to obtain posts, pulpwood, poles, and sawlogs and to salvage dead or dying trees. These cuttings should be made at times when the sale of the wood products will pay for the cutting.

The length of time between cuttings in the same area depends on the suitability of a site for trees and the degree of thinning. This time between cuttings is called the cutting cycle and is the number of years required after thinning for a stand to grow back to a full stock of dominant trees. The cutting cycle is directly related to the site index, which is the average height, in feet, of a normal stand of trees at 50 years of age. Following are approximate cutting cycles, in years, listed according to the site indexes of trees in stands that are to be moderately thinned.

Site index	*Cutting cycle*
50	9
60	8
70	7
80	6
90-100	5

Harvest cutting.—In this method of cutting, mature trees are cut in a way that will assist the reproduction of the species removed and the growth of a new stand. Enough trees should be left standing to provide a source of seed. Cut the trees that are no longer growing rapidly and those that are poorly formed, lacking in vigor, and of undesirable species. Do not harm the remaining trees.

Natural seeding.—Open or understocked woodland should be managed so that pine and yellow-poplar reseed naturally. The area for reseeding should be open enough to allow direct sunlight to fall on the ground. Select seed trees that are full crowned, are within 150 feet of the area to be seeded, and are numerous enough to provide large amounts of seed. Removing a thick layer of leaves, litter, and other organic material from the soil surface, will improve the seedbed and help the seedlings grow. If the layer of organic material is thin, scarify the soil to expose the mineral soil. Prepare the area at a time just before large amounts of seeds fall.

Suitability of Soils for Trees

The suitability of soils for trees depends largely on the capacity of the soils to supply water that trees can use. This moisture-supplying capacity depends on the thickness of the surface layer and on the ease with which roots can penetrate the soil material below and obtain water from it. Deep soils with friable subsoils are generally well suited to trees. Shallow soils with plastic subsoils are poorly suited to trees.

Woodland suitability groups

To assist in planning for productive use of woodland, the soils of the county have been placed in eight woodland suitability groups. Each group consists of soils that have about the same water-supplying capacity and, therefore, about the same potential productivity. The soils in each group are subject to similar hazards and limitations, and they require similar management.

WOODLAND SUITABILITY GROUP 1

This group consists of deep, permeable, well-drained to somewhat poorly drained soils on first bottoms and in draws. These soils are:

Chewacla silt loam.
Congaree fine sandy loam.
Congaree silt loam.

Local alluvial land.
Mixed alluvial land, well drained.
Starr loam, 0 to 7 percent slopes.
State fine sandy loam.

WOODLAND SUITABILITY GROUP 2

In this group are poorly drained, deep soils on first bottoms and in draws. A high water table is likely at times. These soils are:

Mixed alluvial land, poorly drained.
Wehadkee loams.
Worsham fine sandy loam, 0 to 7 percent slopes.

WOODLAND SUITABILITY GROUP 3

In this group are deep, moderately well drained to somewhat poorly drained soils on stream terraces. These soils have a surface layer more than 6 inches thick. The subsoil is friable to firm and clayey. These soils are:

Altavista fine sandy loam, 0 to 2 percent slopes.
Altavista fine sandy loam, 2 to 7 percent slopes.
Altavista fine sandy loam, 7 to 10 percent slopes.
Augusta silt loam.

WOODLAND SUITABILITY GROUP 4A

This group consists of moderately deep to deep, well-drained, permeable soils on uplands. These soils are uneroded to slightly eroded. Their surface layer is more than 6 inches thick, and their subsoil is friable to firm and clayey. These soils are:

Appling fine sandy loam, 2 to 7 percent slopes.
Appling fine sandy loam, 7 to 10 percent slopes.
Appling fine sandy loam, 10 to 14 percent slopes.
Appling fine sandy loam, 14 to 25 percent slopes.
Appling fine sandy loam, 25 to 45 percent slopes.
Cecil fine sandy loam, 2 to 7 percent slopes.
Cecil fine sandy loam, 7 to 10 percent slopes.
Cecil fine sandy loam, 10 to 14 percent slopes.
Cecil fine sandy loam, 14 to 25 percent slopes.
Cecil fine sandy loam, 25 to 40 percent slopes.
Cecil loam, 7 to 10 percent slopes.
Cecil gravelly fine sandy loam, 2 to 7 percent slopes.
Cecil gravelly fine sandy loam, 7 to 10 percent slopes.
Cecil gravelly fine sandy loam, 10 to 14 percent slopes.
Cecil gravelly fine sandy loam, 14 to 25 percent slopes.
Georgeville silt loam, 10 to 25 percent slopes.
Halewood stony sandy loam, 7 to 10 percent slopes.
Halewood stony sandy loam, 10 to 14 percent slopes.
Halewood stony sandy loam, 14 to 25 percent slopes.
Halewood stony sandy loam, 25 to 40 percent slopes.
Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes.
Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes.
Lloyd loam, 2 to 7 percent slopes.
Lloyd loam, 7 to 10 percent slopes.
Lloyd loam, 10 to 14 percent slopes.
Lloyd loam, 14 to 25 percent slopes.
Lloyd loam, 25 to 40 percent slopes.
Madison fine sandy loam, 2 to 7 percent slopes.
Madison fine sandy loam, 7 to 10 percent slopes.
Madison fine sandy loam, 10 to 14 percent slopes.
Madison fine sandy loam, 14 to 25 percent slopes.
Madison gravelly fine sandy loam, 7 to 10 percent slopes.
Madison gravelly fine sandy loam, 10 to 14 percent slopes.
Madison gravelly fine sandy loam, 14 to 25 percent slopes.
Madison gravelly fine sandy loam, 25 to 40 percent slopes.
Mayodan fine sandy loam, 2 to 7 percent slopes.
Mayodan fine sandy loam, 7 to 10 percent slopes.
Mayodan fine sandy loam, 10 to 14 percent slopes.
Mayodan fine sandy loam, 14 to 40 percent slopes.
Wadesboro fine sandy loam, 2 to 7 percent slopes.
Wadesboro fine sandy loam, 7 to 10 percent slopes.
Wadesboro fine sandy loam, 10 to 14 percent slopes.
Wadesboro fine sandy loam, 14 to 30 percent slopes.

WOODLAND SUITABILITY GROUP 4B

In this group are eroded soils that are moderately deep to deep, well drained, and permeable. These soils are on uplands. The surface soil is less than 6 inches thick. In some places cultivation has brought subsoil material into the plow layer. The subsoil is friable to firm and clayey. The soils in this group are:

Appling fine sandy loam, 2 to 7 percent slopes, eroded.
Appling fine sandy loam, 7 to 10 percent slopes, eroded.
Appling fine sandy loam, 10 to 14 percent slopes, eroded.
Appling fine sandy loam, 14 to 25 percent slopes, eroded.
Cecil fine sandy loam, 2 to 7 percent slopes, eroded.
Cecil fine sandy loam, 7 to 10 percent slopes, eroded.
Cecil fine sandy loam, 10 to 14 percent slopes, eroded.
Cecil fine sandy loam, 14 to 25 percent slopes, eroded.
Cecil fine sandy loam, 25 to 40 percent slopes, eroded.
Cecil loam, 2 to 7 percent slopes, eroded.
Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded.
Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded.
Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded.
Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded.
Davidson clay loam, 2 to 7 percent slopes, eroded.
Davidson clay loam, 7 to 10 percent slopes, eroded.
Georgeville silt loam, 2 to 10 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded.
Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded.
Hiwassee loam, 2 to 7 percent slopes, eroded.
Lloyd loam, 2 to 7 percent slopes, eroded.
Lloyd loam, 7 to 10 percent slopes, eroded.
Lloyd loam, 10 to 14 percent slopes, eroded.
Lloyd loam, 14 to 25 percent slopes, eroded.
Madison fine sandy loam, 2 to 7 percent slopes, eroded.
Madison fine sandy loam, 7 to 10 percent slopes, eroded.
Madison fine sandy loam, 10 to 14 percent slopes, eroded.
Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded.
Mayodan fine sandy loam, 2 to 7 percent slopes, eroded.
Mayodan fine sandy loam, 7 to 10 percent slopes, eroded.
Mayodan fine sandy loam, 10 to 14 percent slopes, eroded.
Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded.
Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded.
Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded.
Wickham fine sandy loam, 2 to 7 percent slopes, eroded.
Wickham fine sandy loam, 7 to 14 percent slopes, eroded.

WOODLAND SUITABILITY GROUP 4C

This group consists of moderately deep to deep, well-drained, severely eroded soils on uplands. These soils have a friable to firm clayey subsoil. The surface layer consists chiefly of subsoil material. The soils are:

Cecil clay loam, 2 to 7 percent slopes, severely eroded.
Cecil clay loam, 7 to 10 percent slopes, severely eroded.
Cecil clay loam, 10 to 14 percent slopes, severely eroded.
Cecil clay loam, 14 to 25 percent slopes, severely eroded.
Cecil clay loam, 25 to 40 percent slopes, severely eroded.
Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded.
Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded.
Lloyd clay loam, 2 to 10 percent slopes, severely eroded.
Lloyd clay loam, 10 to 14 percent slopes, severely eroded.
Lloyd clay loam, 14 to 25 percent slopes, severely eroded.

WOODLAND SUITABILITY GROUP 5A

In this group are shallow, well-drained, uneroded or slightly eroded soils that have a loamy surface layer

directly over weathered acidic rocks. The surface layer is more than 6 inches thick. The soils are:

Louisburg coarse sandy loam, 7 to 14 percent slopes.
Louisburg coarse sandy loam, 14 to 25 percent slopes.
Louisburg coarse sandy loam, 25 to 50 percent slopes.

WOODLAND SUITABILITY GROUP 5B

In this group are slowly permeable, moderately deep to deep, eroded soils that have a firm clay subsoil directly over weathered basic rocks. The surface layer is generally less than 6 inches thick. In some places the surface layer contains subsoil material. The soils are:

Mecklenburg loam, 2 to 7 percent slopes, eroded.
Mecklenburg loam, 7 to 14 percent slopes, eroded.
Mecklenburg loam, 14 to 25 percent slopes, eroded.

WOODLAND SUITABILITY GROUP 6A

This group consists of shallow, well-drained soils that have a loamy surface layer directly over weathered mixed acidic and basic rocks, and soils that have a shallow zone for tree roots because of a very plastic, very slowly permeable subsoil. These soils are slightly to moderately eroded, and in some places the surface layer contains subsoil material. The soils are:

Iredell fine sandy loam, 2 to 7 percent slopes.
Iredell fine sandy loam, 2 to 7 percent slopes, eroded.
Iredell fine sandy loam, 7 to 10 percent slopes.
Iredell fine sandy loam, 7 to 10 percent slopes, eroded.
Iredell fine sandy loam, 10 to 14 percent slopes.
Iredell fine sandy loam, 10 to 14 percent slopes, eroded.
Wilkes sandy loams, 2 to 10 percent slopes.
Wilkes sandy loams, 10 to 14 percent slopes.
Wilkes sandy loams, 14 to 25 percent slopes.
Wilkes sandy loams, 25 to 50 percent slopes.

WOODLAND SUITABILITY GROUP 6B

In this group are shallow, well-drained, severely eroded soils that have a loamy surface layer directly over weathered acidic and basic rocks. Most of the original

TABLE 2.—*Growth of trees in woodland suitability groups*

[Dashed lines indicate that soils in group are not generally planted to trees. Refer to

Suitability group	Site index range for				
	Loblolly pine	Shortleaf pine	White pine	Virginia pine	Yellow-poplar
Group 1: Deep, permeable, well-drained to somewhat poorly drained soils on first bottoms and in draws.	90–100	75–85	90–100	---	95–105
Group 2: Deep, poorly drained soils on first bottoms and in draws; high water table at times.	90–100	75–85	90–100	---	85–95
Group 3: Deep, moderately well drained to somewhat poorly drained soils on stream terraces; subsoil friable to firm and clayey.	85–95	65–75	85–95	---	85–95
Group 4A: Moderately deep to deep, well-drained, permeable soils on uplands; uneroded or slightly eroded; surface layer more than 6 inches thick; subsoil friable to firm and clayey.	80–90	65–75	80–90	---	---
Group 4B: Eroded soils on uplands; moderately deep to deep, well drained, and permeable; surface layer less than 6 inches thick; subsoil friable to firm and clayey.	70–80	60–70	70–80	---	---
Group 4C: Severely eroded soils on uplands; moderately deep to deep and well drained; surface layer chiefly of subsoil material; subsoil friable to firm and clayey.	60–70	55–65	---	---	---
Group 5A: Shallow, well-drained soils with a loamy surface layer directly over weathered acidic rock; surface layer more than 6 inches thick.	70–80	55–65	---	60–70	---
Group 5B: Slowly permeable, moderately deep to deep, eroded soils with a firm clay subsoil directly over weathered basic rocks; surface layer generally less than 6 inches thick.	65–75	50–60	---	55–60	---
Group 6A: Shallow, well-drained soils with a loamy surface layer directly over weathered mixed acidic and basic rocks; and soils with a shallow root zone directly over a very plastic, very slowly permeable subsoil.	60–70	50–60	---	55–65	---
Group 6B: Shallow, well-drained, severely eroded soils with a loamy surface layer directly over weathered acidic and basic rocks.	55–65	40–50	---	---	---
Group 7: Sandy, excessively drained soils on first bottoms	70–80	55–65	---	---	---
Group 8: Severely eroded, shallow to moderately deep, well-drained soils on uplands; subsoil firm and clayey; surface layer consists chiefly of material from lower subsoil; gullies common.	50–60	<50	---	---	---

surface soil has been lost through erosion. Loose rock fragments are scattered on the surface, and rock outcrops are numerous. The soils are:

Wilkes sandy loams, 2 to 10 percent slopes, severely eroded.
Wilkes sandy loams, 10 to 25 percent slopes, severely eroded.

WOODLAND SUITABILITY GROUP 7

In this group are sandy, excessively drained soils on first bottoms. The soils are:

Buncombe loamy sand.
Buncombe sand.

WOODLAND SUITABILITY GROUP 8

In this group are severely eroded, shallow to moderately deep, well-drained soils that have a firm, clayey subsoil and occur on uplands. The surface layer of these soils consists chiefly of material brought up from the lower subsoil. Many shallow and deep gullies have formed. The soils in this group are:

Moderately gullied land, rolling.
Moderately gullied land, hilly.
Severely gullied land.

Woodland productivity and hazards to growth and management

Table 2 lists, for each woodland suitability group, the site index ranges of suitable trees, hazards to growth, and limitations to management. The site index is the expected average height, in feet, of a normal stand of trees 50 years old.

Competition from other plants is rated as slight, moderate, or severe. If competition is *slight*, undesirable plants are no special problem; if *moderate*, they delay but do not prevent establishment of normal, fully stocked stands; and if *severe*, they prevent trees from restocking naturally.

and estimates of hazards to growth and management

text for description of each woodland suitability group and a list of the soils it contains]

Hazards				
Plant competition	Windthrow	Seedling mortality	Erosion	Equipment limitations
Severe	Slight	Slight	None to slight	Moderate to severe.
Severe	Slight	Moderate to severe	None	Severe.
Severe	Slight	Moderate	Slight	Severe.
Moderate	Slight	Slight	Slight to moderate	Slight.
Moderate	Slight to moderate	Slight to moderate	Slight to moderate	Slight.
Slight	Moderate to severe	Moderate to severe	Severe	Moderate.
Slight to moderate	Moderate to severe	Moderate	Moderate to severe	Slight.
Slight to moderate	Severe	Moderate	Severe	Moderate.
Slight to moderate	Severe	Severe	Severe	Severe.
Slight	Very severe	Very severe	Very severe	Very severe.
Slight	Slight	Moderate to very severe	Slight	Moderate.
Slight	Severe	Severe to very severe	Very severe	Severe.

Windthrow hazard, which depends on development of roots and their ability to hold the tree firmly in the soil, is also rated slight, moderate, and severe. If the windthrow hazard is *slight*, roots develop enough to hold the tree firmly in the soil; if *moderate*, roots develop enough to hold the tree firmly except when the soil is excessively wet and the wind velocity is great; if *severe*, roots do not provide enough stability to prevent the tree from blowing over if it is released on all sides.

Seedling mortality is the failure of seedlings to grow in a soil after natural seeding or after seedlings are planted. Mortality is *slight* if the trees ordinarily regenerate naturally in places where there are enough seeds; or if not more than 25 percent of the planted seedlings die because of effects of the soil. It is *moderate* if trees do not always regenerate naturally in numbers needed for adequate restocking; or if 25 to 50 percent of the planted seedlings die because of effects of the soil. It is *severe* if trees do not ordinarily reseed naturally in places where seeds are adequate; or if more than 50 percent of the planted seedlings die because of effects of the soil. In places where seedling mortality is severe, it will be necessary to replant considerably, to prepare a special seedbed, and to use the best methods of planting to assure a full stand of trees.

The ratings of erosion hazard are for the groups of soils under good management but unprotected by special practices.

Equipment limitations are rated according to the degree the soils in a group restrict or prevent the use of forestry equipment. Limitations are *slight* if there are no restrictions on the type of equipment or on the time of year that equipment can be used. Limitations are *moderate* if some types of equipment cannot be used, if the time equipment cannot be used is less than 3 months a year, and if the use of equipment damages the tree roots to some extent. Limitations are *severe* if many types of equipment cannot be used, if the time equipment cannot be used is more than 3 months a year, and if the use of equipment severely damages the roots of trees and the structure and stability of the soil.

Yield data.—Table 3 lists yields in board feet per acre for second-growth loblolly pine and shortleaf pine, at 50, 60, and 70 years of age in even-aged unmanaged, normal stands (*8*).[1] These yields are listed for stated site indexes and according to three methods of estimating yields. A normal stand is one in which the crop trees occupy all growing space but have ample room to grow.

Engineering Applications

This section is included so that the soil survey information in this report can be more readily used for engineering purposes. The information can be used to:

1. Make land use and soil studies that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Make preliminary estimates of the engineering properties of soils in planning for agricultural drainage systems, farm ponds, irrigation systems, diversions, and terraces.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting highways and airport locations and in planning detailed investigations for the selected locations.

[1] Italic numbers in parentheses refer to Literature Cited, p. 72.

TABLE 3.—*Yields, in board-feet per acre, of fully stocked stands of second-growth loblolly pine and shortleaf pine by site index and age*

Site index	Yield per acre [1] (Doyle rule)			Yield per acre [2] (Scribner decimal C rule)			Yield per acre [3] (International rule, 1/8 inch)		
	Age in years—			Age in years			Age in years—		
	50	60	70	50	60	70	50	60	70
Loblolly Pine	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*
60	3,000	5,000	7,000	14,700	18,550	21,500	15,000	19,000	22,000
70	6,500	10,000	12,500	21,900	26,150	29,500	22,000	26,500	29,500
80	11,500	16,000	19,500	29,050	34,100	37,850	29,500	34,500	38,000
90	16,500	22,000	26,000	36,400	42,400	46,660	37,500	43,000	47,000
100	23,000	29,500	33,000	45,200	51,800	56,400	45,500	52,500	57,000
Shortleaf Pine									
60	4,350	7,600	10,250	18,400	24,150	28,350	18,300	24,500	28,700
70	8,650	12,600	16,250	26,650	33,300	38,000	27,200	33,500	38,200
80	13,550	18,850	23,450	35,300	42,300	47,600	35,600	42,600	47,900
90	20,450	27,400	32,850	44,100	51,800	57,600	44,250	52,250	58,100
100	29,500	37,250	42,950	53,200	61,900	68,500	53,800	62,500	69,500

[1] Trees 9 inches in diameter and larger.
[2] Trees 8 inches in diameter and larger.
[3] Trees 7 inches in diameter and larger.

4. Locate sources of construction materials.
5. Correlate the performance of engineering structures with soil mapping units so that information useful in designing and maintaining the structures can be obtained.
6. Determine the suitability of the soils for cross-country movements of vehicles and construction equipment.
7. Supplement information from other maps and reports and from aerial photographs for the purpose of making maps and reports that can be used readily by engineers.
8. Make preliminary evaluation of the suitability of a particular area for construction purposes.

However, the mapping and the descriptive report are somewhat generalized and should be used only in planning more detailed field investigations to determine the condition of the soil, in place, at the proposed construction site.

In order to make the best use of the map and the descriptive report, the engineer should understand the classification system used by soil scientists. He should also have a knowledge of the physical properties of the soil material and the condition of the soil when it is in place. Therefore, he should test the soil materials and observe the behavior of the soils when they are used in engineering structures and foundations. Then the engineer can develop design criteria for the soil units delineated on the map.

Engineering Test Data

Soil samples from the principal soil type of eight extensive series were tested in accordance with standard procedures (*1*) to help evaluate the soils for engineering purposes. The test data are given in table 4, which includes data obtained in mechanical analyses and plasticity tests.

The result of a mechanical analysis, obtained by combined sieve and hydrometer methods, may be used to determine the relative proportions of the different size particles making up the soil sample. The clay content obtained by the hydrometer method, which is generally used by engineers, should not be used to determine soil textural classes.

The values of the liquid limit and plasticity index indicate the effect of water on the consistence of soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a solid to a semisolid, or plastic, state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the material passes from a solid to a plastic state.

The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and plastic limit. It indicates the range of moisture content within which soil material is in a plastic condition.

Table 4 also gives the two engineering classifications for each soil sample. These classifications are based on the mechanical analysis, the liquid limit, and the plastic limit.

Engineering Soil Classification

Many engineers classify a soil material by either the AASHO (*1*) or the Unified (*10*) classification; in both, the gradation of material passing the 3-inch sieve and the plasticity of this material are considered. The classification permits the engineer to make a rapid appraisal of the soil material by comparing it with other soils having the same classification.

Most of the highway engineers class soil material in accordance with the AASHO method. In this system, soil materials are classified in seven principal groups. The groups range from A-1, consisting of gravelly soils of high bearing capacity, to A-7, consisting of clayey soils having low strength when wet. Within each group, the relative engineering value of the soil material is indicated by a group index number. These numbers range from 0 for the best material to 20 for the poorest. The group index number is shown in parentheses following the soil group symbol.

The Unified classification was developed at the Vicksburg Waterways Experiment Station of the Corps of Engineers, U.S. Army. In this system, soil material is put into 15 classes that are designated by pairs of letters. These classes range from GW, consisting of well-graded gravel, gravel and sand mixtures, and a little fine material, to Pt, consisting of peat and other highly organic soils.

Engineering Descriptions of Soils

In table 5 soil characteristics that are significant to engineering are given for the soil series, or groups of soils, and the miscellaneous land in the county. The classification and grain size for eight of these groups of soils were determined from the results of soil tests. (See table 4.) Some variations from the test results and engineering classification should be anticipated. Other data shown in table 5 were estimated from soil characteristics observed in the field and from the results of engineering soil tests made in other counties.

The descriptions of the soil series in table 5 apply only to the uneroded and moderately eroded soils in the series. For the series that have severely eroded soils, normally the second layer of the described profile is the surface layer.

A range in depth is given for the seasonally high water table for depths as much as 8 feet. Depths of more than 8 feet are designated 8+ because they cannot be estimated exactly.

The approximate depth to bedrock has a considerable range for most soils. This is because the resistance of the bedrock to weathering varies from place to place. The ranges in depth to bedrock listed in table 5 generally occur, but in many places soft, weathered rock extends to depths greater than those given.

Permeability was estimated for the subsoil in place, without compaction. The estimates were based on observed characteristics and were compared with permeability tests made on undisturbed cores of similar material.

TABLE 4.—*Engineering test data*[1] *for soil samples*

Soil name and location[2]	Parent material	Bureau of Public Roads report No.	Depth	Horizon	Mechanical analysis[3] Percentage passing sieve— 3-in.	2-in.	1½-in.	1-in.
			Inches					
Appling fine sandy loam:								
Southwest quadrant of Brooks Crossroads and 100 feet from old U.S. Highway 421.	Granite	S34762	3–8	A_2				100
		S34763	16–23	B_{21}				
		S34764	41–62+	C				
Cecil fine sandy loam:								
2 miles east of Brooks Crossroads	Granite gneiss containing biotite mica.	S34765	5–10	A_3	100	98	98	96
		S34766	13–27	B_2			100	99
		S34767	34–72	C_1				
Congaree fine sandy loam:								
1 mile east of Enon	Alluvium	S34768	0–9	A_p				
		S34769	22–36	C_2				
		S34770	36–52+	C_3				
Hayesville fine sandy loam:								
2½ miles west of Rena	Granite gneiss	S34771	3–9	A_2	100	99	99	99
		S34772	25–31	B_{22}				
		S34773	35–40+	C			100	99
Iredell fine sandy loam:								
1 mile southeast of Courtney	Mafic rock	S34774	6–11	A_2				
		S34775	11–22	B_2				
		S34776	22–30+	C				
Lloyd loam:								
1½ miles southwest of Huntsville	Red and black mafic rock containing some mica.	S34777	0–6	A_1				
		S34778	19–38	B_{22}				
		S34779	53–90	C_1				
Mayodan fine sandy loam:								
Northeast corner of Crossroads Baptist Church at Courtney.	Triassic sandstone and shale.	S34780	3–8	A_2		100	99	96
		S34781	11–24	B_2				100
		S34782	32–40	C_1				
Wickham fine sandy loam:								
2 miles northeast of Enon	Alluvium (terrace)	S34783	0–11	A_p				
		S34784	19–29	B_{22}				
		S34785	29–53	B_3				

[1] Tests performed by the Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials (AASHO).

[2] All profiles are modal.

[3] Mechanical analyses according to the American Association of State Highway Officials Designation T 88. Results by this procedure frequently may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette

taken from eight soil profiles, Yadkin County, N.C.

Mechanical analysis [3]—Continued											Liquid limit	Plasticity index	Classification	
Percentage passing sieve—Continued							Percentage smaller than—							
¾-in.	⅜-in.	No. 4 (4.76 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.25 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [4]	Unified [5]
99	98	97	96	80	66	31	26	19	12	7	NP [6]	NP [6]	A 2 4(0)	SM.
			100	89	81	60	57	52	45	42	53	23	A 7 5(12)	MH CH.
			100	94	89	65	61	54	42	36	61	17	A–7–5(12)	MH.
95	91	89	88	76	65	39	34	27	18	13	NP	NP	A–4(1)	SM.
99	98	97	96	88	82	61	60	54	46	41	51	21	A 7 5(12)	MH CH.
			100	95	88	62	58	51	41	36	50	16	A–7 5(9)	ML.
			100	99	92	32	23	14	7	5	NP	NP	A 2 4(0)	SM.
				100	98	68	60	42	28	22	31	9	A–4(7)	ML–CL.
				100	96	53	45	31	21	16	27	5	A–4(4)	ML–CL.
97	94	91	88	72	62	36	32	24	16	11	NP	NP	A 4(0)	SM.
			100	86	78	61	57	52	44	42	46	18	A 7 6(9)	ML CL.
98	95	92	88	69	59	43	40	36	32	30	45	12	A–7–5(2)	SM.
100	99	97	88	79	76	54	47	24	10	5	NP	NP	A 4(4)	ML.
			100	99	98	89	85	74	67	60	84	49	A–7–5(20)	CH.
			100	99	96	81	77	64	53	46	64	37	A 7 6(20)	CH.
			100	96	91	72	68	53	39	26	42	12	A 7 5(9)	ML.
			100	98	96	86	83	76	63	54	78	35	A–7–5(20)	MH.
			100	98	95	83	78	66	41	33	68	18	A 7 5(15)	MH.
94	89	85	82	73	68	53	47	29	14	10	NP	NP	A 4(4)	ML.
99	98	97	95	90	88	83	82	74	61	52	73	35	A–7–5(20)	MH CH.
			100	94	91	84	81	72	55	44	73	33	A–7–5(20)	MH.
100	99	98	96	86	78	51	44	34	25	19	24	7	A 4(3)	ML CL.
			100	95	91	77	74	65	57	51	60	23	A 7 5(17)	MH.
			100	92	85	61	60	53	46	42	53	20	A 7 5(12)	MH.

method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soils.

[4] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, Ed. 7): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes. AASHO Designation M 145–49.

[5] Based on the Unified Soil Classification System, Technical Memorandum No. 3–357, Volume 1, Waterways Experiment Station, Corps of Engineers, March 1953.

[6] NP means nonplastic.

TABLE 5.—*Engineering description of soils*

[Dashes indicate information is not available

Soils	Range in slope	Depth to seasonally high water table	Depth to bedrock	Permeability of subsoil	Reaction (pH)	Site and soil description
Soils on alluvial plains:	*Percent*	*Feet*	*Feet*			
Buncombe	0 to 3	4 to 8	6 to 25	Rapid	5.1 to 5.5	24 to 48 inches of well-drained loamy sand or sand on stream flood plains; over stratified alluvial materials that include beds of gravel in places. Subject to occasional overflow.
Chewacla	0 to 2	2 to 4	6 to 25	Moderate	5.1 to 5.5	10 to 18 inches of somewhat poorly drained silt loam on stream flood plains; over stratified alluvial materials that include beds of sand and gravel in places. Subject to frequent overflow.
Congaree [1]	0 to 3	3 to 8	6 to 25	Moderately rapid.	5.6 to 6.0	30 to 48 inches of well-drained silt loam or fine sandy loam on stream flood plains; over stratified alluvial materials that include beds of sand and gravel in places. Subject to occasional overflow.
Wehadkee	0 to 2	0 to 2	6 to 25	Moderately slow.	5.1 to 5.5	10 to 20 inches of poorly drained silt loam on stream flood plains; over stratified alluvial materials. Subject to frequent overflow.
Soils on stream terraces:						
Altavista	0 to 10	3 to 8	10 to 25	Moderate	5.6 to 6.0	6 to 12 inches of moderately well drained fine sandy loam over 30 to 60 inches of clay or sandy clay; underlying materials are stratified alluvial deposits that include beds of gravel.
Augusta	0 to 6	1 to 3	10 to 25	Moderately slow.	5.1 to 5.5	8 to 14 inches of somewhat poorly drained silt loam over 30 to 60 inches of clay loam or silty clay loam; underlying materials are stratified alluvial deposits that include beds of gravel.
Hiwassee	2 to 7	8+	6 to 30	Moderate	6.1 to 6.5	6 to 12 inches of loam or clay loam over 48 to 60 inches of clay; soil is well drained and overlies alluvial deposits that include beds of gravel.
State	0 to 2	5 to 8	10 to 25	Moderately rapid.	5.6 to 6.0	8 to 12 inches of fine sandy loam over 18 to 48 inches of sandy clay loam to silt loam; soil is well drained and overlies alluvial deposits that include beds of gravel.
Wickham [1]	2 to 14	8+	10 to 25	Moderately slow.	5.6 to 6.0	6 to 12 inches of fine sandy loam over 30 to 60 inches of clay or silty clay; soil is well drained and overlies alluvial deposits that include beds of gravel.
Soils on local alluvium:						
Starr	0 to 7	4 to 8	8 to 30	Moderately rapid.	5.6 to 6.0	24 to 60 inches of well-drained loam or clay loam at base of slopes. Subject to overwash.
Worsham	0 to 7	0 to 2	6 to 20	Moderately slow.	5.1 to 5.5	5 to 10 inches of fine sandy loam over 18 to 36 inches of sandy clay or clay, at base of slopes; soil is poorly drained and is subject to seepage and overwash.
Soils on uplands:						
Appling [1]	2 to 45	8+	6 to 25	Moderately slow.	5.6 to 6.0	5 to 12 inches of fine sandy loam over 24 to 36 inches of sandy clay; soil is well drained and overlies unconsolidated weathered granite, gneiss, or schist; on broad ridges or side slopes.
Cecil [1]	2 to 40	8+	6 to 35	Moderate	5.6 to 6.0	4 to 12 inches of fine sandy loam or clay loam over 24 to 60 inches of clay; soil is well drained and overlies unconsolidated weathered granite, gneiss, or schist; on ridges or side slopes.

See footnote at end of table.

and their estimated physical properties

for an estimate, or does not apply]

Horizon	Depth from surface in typical profile	Classification		Percentage passing sieve			Structure	Shrink-swell potential
		AASHO	Unified	No. 4 (4.76 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)		
	Inches							
A	0 to 18	A-2-4	SM	100	98	18	Single grain	Low.
C	18 to 54	A-2-4	SM	100	100	18	Single grain	Low.
A	0 to 12	A-4	SM	100	99	35	Granular	Low.
C	12 to 54	A-4	ML	100	100	50	Massive	Low.
A	0 to 9	A-2-4	SM	100	99	32	Granular	Low.
C_1	9 to 36	A-4(7)	ML-CL	100	100	68	Massive	Low.
C_2	36 to 52	A-4(1)	ML-CL	100	100	53	Massive	Low.
A	0 to 15	A-4	ML	100	99	60	Massive	Low.
C	15 to 54	A-6	ML	100	100	70	Massive	Low.
A	0 to 10	A-4	SM	100	90	40	Granular	Low.
B	10 to 44	A-6	MH-ML	100	95	65	Blocky	Moderate.
C	41 to 72	A-6	MH-ML	100	90	60	Massive	Moderate.
A	0 to 10	A-4	SM	100	90	40	Granular	Low.
B	10 to 44	A-6	MH-ML	100	95	65	Blocky	Moderate.
C	44 to 72	A-6	MH-ML	100	90	60	Massive	Moderate.
A	0 to 8	A-7	ML	100	96	75	Granular	Low.
B	8 to 54	A-7	MH	100	98	90	Blocky	Moderate.
C	54 to 72	A-7	MH	100	98	85		Moderate.
A	0 to 10	A-4	SM	100	80	40	Granular	Low.
B	10 to 28	A-6	CL-ML	100	90	65	Blocky	Low.
C	28 to 60	A-6	CL-ML	100	85	55	Massive	Low.
A	0 to 11	A-4(3)	ML	98	86	50	Granular	Low.
B	11 to 30	A-7-5(17)	MH		95	77	Blocky	Moderate.
C	30 to 72	A-7-5(12)	MH		92	64		Moderate.
A	0 to 28	A-4	ML-CL	100	95	75	Granular	Moderate.
B	28 to 42	A-6	ML-CL	100	95	75	Granular	Moderate.
A	0 to 6	A-4	ML-CL	100	91	65	Granular	Low.
B	6 to 24	A-7-6	MH	100	95	75	Blocky	Moderate.
C	24 to 42	A-7-6	MH	100	90	65	Massive	Moderate.
A	0 to 10	A-2-4(0)	SM	97	80	31	Granular	Low.
B	10 to 36	A-7-5(12)	MH-ML	100	89	60	Blocky	Moderate.
C	36 to 72	A-7-5(12)	MH	100	94	65		Low.
A	0 to 10	A-4(1)	SM	89	76	39	Granular	Low.
B	10 to 34	A-7-5(12)	MH-ML	97	88	64	Blocky	Moderate.
C	34 to 72	A-7-5(9)	ML	100	95	62	Massive	Low.

TABLE 5. *Engineering description of soils and*

[Dashes indicate information is not available

Soils	Range in slope	Depth to seasonally high water table	Depth to bedrock	Permeability of subsoil	Reaction (pH)	Site and soil description
Soils on uplands—Con.						
Davidson	*Percent* 2 to 10	*Feet* 8+	*Feet* 6 to 25	Moderate	6.0 to 6.5	5 to 8 inches of clay loam over 24 to 48 inches of clay; soil is well drained and overlies dark-colored rock; on ridges and gentle side slopes.
Georgeville	2 to 25	8+	4 to 12	Moderate	5.6 to 6.0	4 to 10 inches of silt loam over 18 to 36 inches of silty clay; soil is well drained and overlies weathered, light-colored, siliceous volcanic slate; on ridges and side slopes.
Halewood	7 to 40	8+	3 to 6	Moderately rapid.	5.6 to 6.0	5 to 8 inches of stony sandy loam over 15 to 30 inches of clay loam; soil is well drained and overlies weathered granite and gneiss; on high ridges and steep slopes in the Brushy Mountain area.
Hayesville [1]	7 to 40	8+	4 to 10	Moderate	5.6 to 6.0	5 to 8 inches of fine sandy loam or loam over 18 to 36 inches of clay loam; soil is well drained and overlies weathered granite, gneiss, and schist; on high ridges, steep slopes, and river bluff areas.
Iredell [1]	2 to 14	3 to 5	3 to 8	Very slow	6.1 to 6.5	4 to 12 inches of fine sandy loam over 10 to 20 inches of very plastic clay; soil is moderately well drained; subsoil is very slowly permeable and overlies dark-colored rock; on ridges and slopes.
Lloyd [1]	2 to 40	8+	5 to 25	Moderate	5.6 to 6.0	4 to 11 inches of loam or clay loam over 20 to 40 inches of clay; soil is well drained and overlies mixed, unconsolidated, dark- and light-colored weathered rock; on ridges and slopes.
Louisburg	7 to 50	8+	1 to 6	Rapid	5.1 to 5.5	8 to 20 inches of excessively drained coarse sandy loam overlying unconsolidated, weathered, light-colored rock; on ridges and slopes.
Madison	2 to 40	8+	4 to 10	Moderate	5.1 to 5.5	4 to 9 inches of fine sandy loam over 10 to 30 inches of clay; soil is well drained and overlies unconsolidated, weathered micaceous schist; on ridges and side slopes.
Mayodan [1]	2 to 40	8+	6 to 15	Moderate	5.1 to 5.5	5 to 10 inches of fine sandy loam over 24 to 40 inches of clay; soil is well drained and overlies weathered sandstone and shale; on ridges and side slopes.
Mecklenburg	2 to 25	8+	4 to 15	Moderately slow.	5.6 to 6.0	4 to 8 inches of loam over 18 to 36 inches of plastic clay; soil is well drained and overlies weathered, dark-colored rock; on ridges and side slopes.
Wadesboro	2 to 30	8+	6 to 15	Moderate	5.1 to 5.5	5 to 10 inches of fine sandy loam over 24 to 60 inches of clay; soil is well drained and overlies weathered sandstone and shale; on ridges and side slopes.
Wilkes	2 to 50	8+	1 to 10	Variable	5.6 to 6.0	10 to 18 inches of excessively drained sandy loam overlying mixed, light- and dark-colored, weathered rock; on steep side slopes and some narrow ridges.
Miscellaneous land:						
Local alluvial land	0 to 7	0 to 5	8 to 20	Rapid	5.6 to 6.0	18 to 36 inches of well-drained sandy loam over 12 to 24 inches of clay loam; this overlies weathered granite or gneiss; at the base of slopes. Subject to overwash.

See footnote at end of table.

their estimated physical properties—Continued

for an estimate, or does not apply]

Horizon	Depth from surface in typical profile	Classification		Percentage passing sieve			Structure	Shrink-swell potential
		AASHO	Unified	No. 4 (4.76 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074) mm.)		
	Inches							
A	0 to 6	A–7–6(9)	ML	98	96	77	Granular	Low.
B	6 to 44	A–7–5(20)	MH	99	99	91	Blocky	Moderate.
C	44 to 96	A–7–5(20)	MH	100	100	98	Massive	Moderate.
A	0 to 7	A–4(6)	ML	89	95	66	Granular	Low.
B	7 to 35	A–7–5(20)	MH–ML	100	99	94	Blocky	Moderate.
C	35 to 60	A–7–5(20)	MH–ML	100	99	93	Platy	Moderate.
A	0 to 9	A–2(0)	SM	75	55	30	Granular	Low.
B	9 to 30	A–7–6(9)	ML–CL	80	66	52	Blocky	Low.
C	30 to 50	A–7–5(2)	SM	80	50	35		Low.
A	0 to 8	A–4(0)	SM	91	72	36	Granular	Low.
B	8 to 31	A–7–6(9)	ML–CL		86	61	Blocky	Moderate.
C	31 to 48	A–7–5(2)	SM	92	69	43	Massive	Low.
A	0 to 11	A–4(1)	ML	97	79	54	Granular	Low.
B	11 to 22	A–7–5(20)	CH		99	89	Massive	High.
C	22 to 40	A–7–6(20)	CH		99	81		Moderate to high.
A	0 to 10	A–7–5(9)	ML	100	96	72	Granular	Low.
B	10 to 40	A–7–5(20)	MH	100	98	86	Blocky	Moderate.
C	40 to 90	A–7–5(15)	ML	100	98	83		Moderate.
A	0 to 20	A–2–4(1)	SM	100	70	28	Granular	Low.
C	20 to 30	A–2–4 or A–2–6	SM	100	75	28	Massive	Low.
A	0 to 6	A–2–4(0)	SM	90	85	35	Granular	Low.
B	6 to 26	A–7–5(16)	MH–ML	99	98	75	Blocky	Moderate.
C	26 to 38	A–5(2)	SM	95	90	40		Low.
A	0 to 9	A–4(4)	ML	85	73	53	Granular	Low.
B	9 to 33	A–7–5(20)	MH–CH	97	90	83	Blocky	Moderate.
C	33 to 48	A–7–5(20)	MH		94	84		Low.
A	0 to 7	A–6	ML–CL	98	90	75	Granular	Low.
B	7 to 38	A–7–5	MH	98	95	79	Blocky	Moderate to high.
C	38 to 60	A–4	ML	99	90	50		Moderate.
A	0 to 7	A–4(5)	ML	90	90	60	Granular	Low.
B	7 to 36	A–7–5(20)	MH	100	95	78	Blocky	Moderate.
C	36 to 60	A–7–5(20)	MH	100	98	85	Massive	Moderate.
A	0 to 12	A–4	SM	95	70	45	Granular	Low.
C	12 to 27	(2)	(2)	60	60	45	Massive	Low.
(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	Low.

TABLE 5. *-Engineering description of soils and*

[Dashes indicate information is not available

Soils	Range in slope	Depth to seasonally high water table	Depth to bedrock	Permeability of subsoil	Reaction (pH)	Site and soil description
Miscellaneous land—Con.	*Percent*	*Feet*	*Feet*			
Mixed alluvial land, poorly drained.	0 to 2	0 to 3	8 to 20	Variable	5.1 to 5.5	Poorly drained, stratified alluvial material; on flood plains.
Mixed alluvial land, well drained.	0 to 2	2 to 6	8 to 20	Variable	5.1 to 5.5	Well-drained, stratified alluvial material; on flood plains.
Moderately gullied land	10 to 40	8+	3 to 20	Moderate		Severely eroded soils with more than 25 percent of surface in gullies; soils are well drained and residual and overlie granite, gneiss, and schist.
Severely gullied land	10 to 40	8+	3 to 20	Variable		Very severely eroded land with more than 75 percent of the surface in gullies.

[1] Engineering test data for a representative soil in this series are given in table 4. The data for these soils were used in estimating the physical properties of the soils in the series.

The soil material in the main horizons of the soils and miscellaneous land listed in table 5 is classed according to the AASHO and the Unified systems. Also listed for these horizons are the estimated percentages of material passing a No. 4 sieve, a No. 40 sieve, and a No. 200 sieve and the estimated shrink-swell potential. The shrink-swell potential is an indication of the volume change that occurs in soil material when its moisture content changes.

Engineering Interpretation for Soils

The interpretation for soils and land types in table 6 was made on the basis of the estimated data in table 5, actual test data, and field observations. In this interpretation are recommendations regarding certain phases of highway work, ratings for the suitability of the soil for specific uses, and a listing of the soil features that affect the construction and use of farm ponds and terraces.

Many soils in the county have only normal obstacles to locating a highway gradeline; the grade can be located in any position on or in the soil. Some soils, however, have a high water table, bedrock, or other obstacles that must be considered before the position of the gradeline is determined. Table 6 lists for each soil series a suitable general location for a highway gradeline.

Highway cuts in most soils of the county need to be protected against erosion by establishing a vegetative cover on their slopes. Though the needed amount of protection differs, it is the practice in the State to establish vegetative cover on all cuts and fills of new roads.

Table 6 also lists ratings for the suitability of the soils as sources for topsoil, borrow material, and cores of dams. The best soils as sources of borrow material for fills in Yadkin County are rated fair to good.

Engineering practices that are generally used in soil conservation require moving large amounts of soil. These practices are normally suited to the conditions in Yadkin County, but in most soils obstacles affect the choice of site, design, and installation of conservation structures. Table 6 gives soil features that hinder the construction and use of farm ponds and terraces. The construction of ponds and terraces is hindered by rock outcrops. The effectiveness of ponds is lessened by a permeable subsoil. The use of terraces is limited by shallow soils and by soils with a plastic subsoil.

Table 6 also evaluates the soils for use as septic tank fields. This evaluation may help those who are selecting a homesite and those who are investigating the suitability of an area for real estate development.

Not included in table 6 but important in highway engineering is information on the need of reinforcing the subgrade if flexible pavement is to be laid. In Yadkin County a porous subbase is used for all rigid pavement. For flexible pavement, some soils and miscellaneous land need to have the subbase reinforced. These are principally the Buncombe, Cecil, and Lloyd soils; Moderately gullied land; and Severely gullied land.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines soils in the field, classifies the soils in accordance with facts that he observes, and maps their boundaries on an aerial photograph or other map.

FIELD STUDY.—The soil surveyor bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern, but are located according to the lay of the land. Ordinarily, they are not more than a quarter of a mile apart, and in places they are much closer. In most soils each boring or hole reveals several distinct layers, called *horizons*, which collectively are called the soil *profile*. Each horizon is studied to see how it differs from others in the profile and to learn the things about the soil that influence its capacity to support plant growth.

their estimated physical properties Continued

for an estimate, or does not apply]

Horizon	Depth from surface in typical profile	Classification		Percentage passing sieve			Structure	Shrink-swell potential
		AASHO	Unified	No. 4 (4.76 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)		
	Inches							
(2)	(2)	A-1	SM ML	(2)	(2)	(2)	Massive	Low.
(2)	(2)	A-4	SM-ML	(2)	(2)	(2)	Massive or single grained.	Low.
(2)	(2)	(2)	(2)	(2)	(2)	(2)	Blocky or massive	Low.
(2)	(2)	(2)	(2)	(2)	(2)	(2)	Blocky or massive	Low.

[2] Variable.

The *color* of a horizon is generally related to the amount of organic matter in the horizon. The darker the surface layer, as a rule, the more organic matter it contains. Different colors in the subsoil ordinarily reflect differences in the parent material or in soil development. Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

The *texture* of a soil is judged in the field by moistening a sample and rubbing it between the fingers, and later may be verified by analyses in the laboratory. It depends on the proportions of sand, silt, and clay in the soil. A fine sand is at least 85 percent sand; it is loose and friable when wet or dry. A clay is never more than 45 percent sand and is always more then 35 percent clay; it is sticky and plastic when wet and hard when dry. Between sand and clay, there are other textures, for example, *clay loam*, *fine sandy loam*, *silt loam*.

The *structure* of a soil is the arrangement of the soil grains into aggregates, and the distinctness, size, and shape of these. Terms for distinctness are *weak*, *moderate*, and *strong;* for size, *very fine*, *fine*, *medium*, *coarse*, and *very coarse;* and for shape, *prismatic*, *blocky*, *subangular blocky*, and *granular*. Soils without structure are described as *single grain* if they are sands, or as *massive* if they are clays.

The *consistence* of a soil is the tendency of the particles to stick together, or cohere, when wet, moist, or dry. Some common terms for consistence are *sticky when wet*, *friable when moist*, and *hard when dry*.

Other characteristics observed in the course of the field study and considered in classifying the soil include the following: The depth of the soil over bedrock or compact layers; the presence of gravel or stones in amounts that will interfere with cultivation; the steepness and pattern of slopes; the degree of erosion; the nature of the underlying parent material from which the soil has developed; and the acidity or alkalinity of the soil as measured by chemical tests.

CLASSIFICATION.—On the basis of the characteristics observed by the soil scientists or determined by laboratory tests, soils are classified into series, types, and phases.

Soil series.—A group of soils that developed from similar parent material and have similar characteristics within the profile, except for texture of the surface layer, is called a soil series. The soils in a series can have variations in slope or in other external features if these variations do not affect the profile characteristics. Each series is named for a place near which it was first mapped. In a county or other area a soil series frequently is represented by only one soil type.

Soil type.—Soils that are similar in kind, thickness, and arrangement of soil layers are classified as one soil type. The texture of the surface layer determines the number of soil types in a series. Thus, Cecil clay loam, Cecil fine sandy loam, Cecil gravelly fine sandy loam, and Cecil loam are soil types in the Cecil series.

Soil phase. Because of differences other than those of kind, thickness, and arrangement of layers, some soil types are divided into two or more phases. Slope variations, number of rock outcrops, degree of erosion, depth of soil over substratum, or natural drainage are examples of characteristics that suggest dividing a soil type into phases. Because of its range of slope, Altavista fine sandy loam is divided into the following phases: Altavista fine sandy loam, 0 to 2 percent slopes; Altavista fine sandy loam, 2 to 7 percent slopes; and Altavista fine sandy loam, 7 to 10 percent slopes.

The soil phase (or the soil type if it has not been subdivided) is the unit shown on the soil map. It is the unit that has the narrowest range of characteristics. Use and management, therefore, can be specified more easily for the soil phase than for a soil series or for broader groups that contain more variations.

TABLE 6. *Engineering*

Soils	Recommendations for location of highway grade line	Suitability of soil material	
		Topsoil	Borrow material for fills
Soils on alluvial plains:			
Buncombe	Above high water	Poor	Poor
Chewacla	Above high water and at least 30 inches above water table.	Good	Poor
Congaree	Above high water	Good	Poor
Wehadkee	Above high water and at least 30 inches above water table.	Poor	Poor
Soils on stream terraces:			
Altavista	Anywhere	Good	Fair
Augusta	At least 30 inches above water table, which should be lowered by ditching.	Fair	Fair
Hiwassee	Anywhere	Fair	Fair
State	Anywhere	Good	Fair
Wickham	Anywhere	Good	Fair
Soils on local alluvium:			
Starr	Anywhere	Good	Fair
Worsham	At least 30 inches above water table, which should be lowered by ditching.	Poor	Poor
Soils on uplands:			
Appling	Anywhere	Good	Fair
Cecil	Anywhere	Good	Fair
Cecil (severely eroded)	Anywhere	Fair	Fair
Davidson	Anywhere	Fair	Fair
Georgeville	Anywhere	Fair	Fair
Halewood	Influenced by stones and bedrock	Poor	Poor because of stones and ledges.
Hayesville	May be influenced by stones and bedrock	Fair	Fair to good
Iredell	Anywhere	Poor	Not suitable
Lloyd	Anywhere	Good	Fair
Lloyd (severely eroded)	Anywhere	Poor	Fair
Louisburg	May be influenced by stones and bedrock	Poor	Fair
Madison	Anywhere	Fair	Fair
Mayodan	Anywhere	Good	Fair
Mecklenburg	Anywhere	Fair	Fair
Wadesboro	Anywhere	Good	Fair
Wilkes	May be influenced by stones and bedrock	Fair	Fair

Footnote at end of table.

interpretation for the soils

as a source for	Soil features affecting		Suitability for septic tank field
Core material for earth dams	Farm ponds	Terraces	
Not suitable because of sand	Porous sand; overflow	(1)	Not generally suitable because of overflow.
Poor because poorly graded in most places.	Overflow	(1)	Not generally suitable because of overflow and high water table.
Poor because poorly graded in most places.	Overflow	(1)	Not generally suitable because of overflow.
Poor because poorly graded in most places.	Overflow	(1)	Not suitable because of overflow and high water table.
Fair to good	Permeable substratum in places	No hazards	Fair.
Fair to good	Permeable substratum in places	(1)	Poor.
Fair	Permeable substratum in places	No hazards	Good.
Fair	Permeable substratum	(1)	Good.
Fair to good	Permeable substratum in places	No hazards	Fair to good.
Fair	Excessive permeability; may require deep core.	No hazards; generally used for sod waterways.	Fair to good.
Fair	Seepage areas; may require toe drains.	Generally used for sod waterways.	Not suitable because of seepage and high water table.
Good	Few rock outcrops	Few rock outcrops and boulders.	Good.
Fair to good	Few rock outcrops; permeable substratum in places.	Few rock outcrops and boulders.	Good.
Fair to good	Few rock outcrops; permeable substratum in places.	Few rock outcrops and boulders; gullies in places.	Good.
Fair	Permeable substratum in places	No hazards	Good.
Fair	Rock outcrops; permeable substratum.	Shallow to rock in places	Good.
Poor	Stones, rock outcrops, and ledges	Stones, rock outcrops, and ledges.	Good.
Fair to good	Few rock outcrops.	Few rock outcrops and boulders.	Good.
Good but plastic and difficult to work.	Few rock ledges and boulders.	Sticky plastic subsoil; shallow to rock in many places.	Poor.
Fair	Few rock outcrops	Few rock outcrops	Good.
Fair	Few rock outcrops	Few rock outcrops; deep gullies in places.	Good.
Fair	Rock outcrops and ledges common	Shallow soil; numerous rock outcrops.	Fair to good.
Fair	Rock outcrops and ledges; permeable substratum.	Rock outcrops and ledges	Good.
Good	Few rock outcrops	Few rock outcrops	Good.
Fair to good	Few rock outcrops	Few rock outcrops	Poor.
Fair to good	Rock ledges sometimes encountered.	Generally no hazards	Good.
Poor	Rock ledges and outcrops; permeable substratum.	Shallow soil; rock outcrops	Poor.

TABLE 6.—*Engineering interpretation*

Soils	Recommendations for location of highway grade line	Suitability of soil material	
		Topsoil	Borrow material for fills
Miscellaneous land:			
Local alluvial land	Anywhere	Good	Fair
Mixed alluvial land, poorly drained.	Above high water and at least 30 inches above water table.	Poor	Poor
Mixed alluvial land, well drained	Above high water	Fair	Poor
Moderately gullied land	Anywhere	Not suitable	Poor
Severely gullied land	Anywhere	Not suitable	Poor

[1] Terraces not needed.

Miscellaneous land types.—Areas of land that have little or no true soil are not classified by series, types, and phases but are identified by descriptive names. Examples in Yadkin County are Local alluvial land; Mixed alluvial land, well drained; and Mixed alluvial land, poorly drained.

Undifferentiated soil group.—Two or more soils that are not regularly associated geographically may be mapped as a single group of undifferentiated soils. An example of such a group is Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. In Yadkin County the Hayesville and Cecil soils are similar and occur in an intricate pattern. Consequently, all of the acreage of Hayesville soils is mapped together with Cecil soils.

Descriptions of Soils

This section provides detailed information about the soils of Yadkin County. It describes the soil series, or groups of soils that are essentially the same in kind of parent material and other characteristics, and the single soils, or mapping units, that are shown on the detailed map at the back of this report.

The soil series are arranged in alphabetic order. Each series is described briefly, and then the single soils, or mapping units, in that series. A mapping unit is one or more areas on the ground, identified by a given symbol on the soil map. Normally, a mapping unit is a member of a soil series, but it may also be two or more soils recognized as different but, for practical reasons of management, not enough different to be separated (undifferentiated soil group); or areas of alluvial land, severely gullied land, and the like that cannot be called soil, because they possess few or none of the characteristics we think of when we speak of soil (miscellaneous land type).

In most instances, however, a mapping unit is a member of a soil series and is either a soil type or a soil phase. The first mapping unit described is the one considered most typical of the series. Other mapping units are then described by pointing out how they differ from the first unit. A detailed description of a soil profile is given in the first mapping unit. The reader is to assume that all other mapping units in the series have essentially the same kind of profile. Differences in the profiles, if any, are stated in the text.

In the profile descriptions, some terms are used that may not be familiar to the general reader. The upper part of the soil is called the *A horizon.* This term refers to the layer that has lost some of its clay and other soluble minerals. Water has leached these out and carried them to the horizon below. The A horizon is the layer in which the most organic matter has accumulated. It may be divided into A_1, A_2, and A_3 horizons.

The *B horizon* is the layer or layers in which some of the clays and minerals leached from the A horizon have accumulated. This horizon is sometimes divided into B_1, B_2, and B_3 horizons. It is frequently referred to as *subsoil.*

Below the B horizon there is a *C horizon,* or parent material. This is the unconsolidated mass of rock or other material from which the soil profile develops.

The color of a soil horizon is denoted by words, such as "yellowish brown," and by Munsell notations, such as "10YR 5/6." Munsell notations indicate color more precisely than words and are used mainly by soil scientists and others who must make detailed comparisons of soils. In this report, the color denoted by words, and by the Munsell notation that follows, is the color of the soil when moist (*7*).

Other terms, such as texture, structure, and consistence, as well as methods of mapping soils, are described in the section "Soil Survey Methods and Definitions." Soil terms are also given in the Glossary. The approximate acreage and the proportionate extent of the soils are given in table 7. The location and distribution of the mapping units are shown on the soil map at the back of this report.

Altavista Series

The Altavista series consists of deep, moderately well drained to well drained soils that have formed in alluvial deposits on the low terraces of the Yadkin River and adjacent streams. These soils have a dark yellowish-brown surface layer and a yellow clayey subsoil. Slopes

for the soils—Continued

as a source for	Soil features affecting		Suitability for septic tank field
Core material for earth dams	Farm ponds	Terraces	
Generally unsuitable because of poorly graded sandy material.	Excessive permeability; may require deep core.	No hazards; generally used for sod waterways.	Fair.
Generally unsuitable because of poorly graded sandy material.	Overflow	(1)	Not suitable because of overflow and high water table.
Generally unsuitable because of poorly graded sandy material.	Overflow	(1)	Not generally suitable because of overflow.
Poor	Gullies	Not suitable	Not suitable.
Poor	Many deep gullies	Not suitable	Not suitable.

range from 0 to 10 percent but generally are less than 6 percent.

In most places these soils contain moderately small amounts of organic matter and available plant nutrients. They are medium acid and have a high moisture-holding capacity.

In Yadkin County the Altavista soils occur with Augusta and Wickham soils. Altavista soils are better drained than Augusta soils, and they have a lighter colored surface layer and a brighter, less mottled subsoil. They differ from Wickham soils in having a lighter colored, more mottled subsoil.

Altavista soils are important agricultural soils in the eastern part of the county, but their total acreage is small. The soils are used chiefly for row crops. They are easy to till, are suited to a wide range of crops, and respond well to good management.

Altavista fine sandy loam, 2 to 7 percent slopes (AfB).—This is a deep, moderately well drained, permeable soil. It formed in alluvium on terraces adjacent to the principal streams. It has a yellowish-brown, mottled clay or clay loam subsoil.

Profile in a rotation pasture consisting of orchardgrass, clover, and wild grasses:

- A_p 0 to 8 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; weak, medium and coarse, granular structure to massive (structureless); friable; few, thin sand lenses in lower portion; abrupt, smooth boundary.
- B_1 8 to 21 inches, yellowish-brown (10YR 5/6) silty clay; moderate, medium, subangular blocky structure; friable to firm; thin, patchy clay films; clear, wavy boundary.
- B_2 21 to 38 inches, yellowish-brown (10YR 5/6) clay loam mottled with pale brown (10YR 6/3) and light gray (10YR 7/2); weak, coarse, subangular blocky structure; firm; prominent, discontinuous clay films; gradual, wavy boundary.
- C 38 inches +, light brownish-gray (10YR 6/2), light clay loam or heavy silt loam with many prominent mottlings of brownish yellow and light gray; massive (structureless); friable; old alluvium; few, thin sand lenses.

The surface layer ranges from grayish brown to dark brown in color and from 6 to 12 inches in thickness. The subsoil ranges from reddish yellow to yellowish brown in color, from clay to silty clay loam in texture, and from 30 to 60 inches in thickness.

Included with this soil are areas of Altavista soil that have a silt loam surface layer and small areas of Augusta silt loam.

This Altavista soil is well suited to cultivation. Most of the acreage has been cleared and is used for general crops. (Capability unit IIe-1)

Altavista fine sandy loam, 0 to 2 percent slopes (AfA).—This soil is in depressions and on flat bottom lands above the normal flood plains. It is at lower elevations and is less sloping than Altavista fine sandy loam, 2 to 7 percent slopes. The surface layer is darker than in that soil, and the subsoil is duller and has grayer, more pronounced mottles.

This soil is suited to a wide range of crops but is used mainly for corn and pasture. For the best yields, artificial drainage is needed. (Capability unit IIw-2)

Altavista fine sandy loam, 7 to 10 percent slopes (AfC).—This soil has better internal and surface drainage than Altavista fine sandy loam, 2 to 7 percent slopes, is more susceptible to erosion, and is more difficult to conserve. If it is cultivated, it needs more careful management.

This soil is suited to a wider range of crops than the other Altavista soils. (Capability unit IIIe-1)

Appling Series

The Appling series consists of deep, well drained, friable to firm soils on the uplands of the Piedmont Plateau. These soils formed in place from weathered, acid, crystalline rocks, chiefly gneiss and granite. They have a grayish brown surface layer and a yellowish-red, clayey subsoil. Slopes range from 2 to 45 percent but generally are less than 15 percent.

These soils are low in organic matter and, ordinarily, are low in available plant nutrients. They are medium acid and medium in their capacity to hold water that plants can use.

Appling soils occur with the Cecil and Madison soils. They have a lighter colored surface layer than the Cecil soils and a yellower subsoil. They are deeper and less gravelly than the Madison soils and are yellower in the subsoil. Appling soils do not contain so much mica as the Madison soils.

TABLE 7.—*Approximate acreage and proportionate extent of soils*

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Altavista fine sandy loam, 0 to 2 percent slopes	134	0.1	Halewood stony sandy loam, 7 to 10 percent slopes	194	0.1
Altavista fine sandy loam, 2 to 7 percent slopes	328	.2	Halewood stony sandy loam, 10 to 14 percent slopes	324	.1
Altavista fine sandy loam, 7 to 10 percent slopes	107	(1)	Halewood stony sandy loam, 14 to 25 percent slopes	548	.3
Appling fine sandy loam, 2 to 7 percent slopes	3,972	1.8	Halewood stony sandy loam, 25 to 40 percent slopes	2,547	1.2
Appling fine sandy loam, 2 to 7 percent slopes, eroded	807	.4	Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded	234	.1
Appling fine sandy loam, 7 to 10 percent slopes	686	.3	Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded	560	.3
Appling fine sandy loam, 7 to 10 percent slopes, eroded	938	.4	Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded	929	.4
Appling fine sandy loam, 10 to 14 percent slopes	932	.4	Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded	894	.4
Appling fine sandy loam, 10 to 14 percent slopes, eroded	933	.4	Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes	2,095	1.0
Appling fine sandy loam, 14 to 25 percent slopes	929	.4	Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded	2,518	1.2
Appling fine sandy loam, 14 to 25 percent slopes, eroded	441	.2	Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes	4,031	1.9
Appling fine sandy loam, 25 to 45 percent slopes	2,133	1.0	Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded	760	.4
Augusta silt loam	200	.1	Hiwassee loam, 2 to 7 percent slopes, eroded	185	.1
Buncombe loamy sand	849	.4	Iredell fine sandy loam, 2 to 7 percent slopes	1,127	.5
Buncombe sand	699	.3	Iredell fine sandy loam, 2 to 7 percent slopes, eroded	201	.1
Cecil fine sandy loam, 2 to 7 percent slopes	7,344	3.4	Iredell fine sandy loam, 7 to 10 percent slopes	657	.3
Cecil fine sandy loam, 2 to 7 percent slopes, eroded	42,596	19.9	Iredell fine sandy loam, 7 to 10 percent slopes, eroded	482	.2
Cecil fine sandy loam, 7 to 10 percent slopes	3,634	1.7	Iredell fine sandy loam, 10 to 14 percent slopes	371	.2
Cecil fine sandy loam, 7 to 10 percent slopes, eroded	20,268	9.5	Iredell fine sandy loam, 10 to 14 percent slopes, eroded	214	.1
Cecil fine sandy loam, 10 to 14 percent slopes	4,209	2.0	Lloyd clay loam, 2 to 10 percent slopes, severely eroded	453	.2
Cecil fine sandy loam, 10 to 14 percent slopes, eroded	13,524	6.3	Lloyd clay loam, 10 to 14 percent slopes, severely eroded	415	.2
Cecil fine sandy loam, 14 to 25 percent slopes	5,783	2.7	Lloyd clay loam, 14 to 25 percent slopes, severely eroded	374	.2
Cecil fine sandy loam, 14 to 25 percent slopes, eroded	7,831	3.6	Lloyd loam, 2 to 7 percent slopes	1,484	.7
Cecil fine sandy loam, 25 to 40 percent slopes	1,764	.8	Lloyd loam, 2 to 7 percent slopes, eroded	2,131	1.0
Cecil fine sandy loam, 25 to 40 percent slopes, eroded	1,248	.6	Lloyd loam, 7 to 10 percent slopes	592	.3
Cecil loam, 2 to 7 percent slopes, eroded	298	.1	Lloyd loam, 7 to 10 percent slopes, eroded	1,267	.6
Cecil loam, 7 to 10 percent slopes	198	.1	Lloyd loam, 10 to 14 percent slopes	584	.3
Cecil gravelly fine sandy loam, 2 to 7 percent slopes	534	.2	Lloyd loam, 10 to 14 percent slopes, eroded	789	.4
Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded	1,641	.8	Lloyd loam, 14 to 25 percent slopes	701	.3
Cecil gravelly fine sandy loam, 7 to 10 percent slopes	513	.2	Lloyd loam, 14 to 25 percent slopes, eroded	761	.4
Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded	1,405	.7	Lloyd loam, 25 to 40 percent slopes	313	.1
Cecil gravelly fine sandy loam, 10 to 14 percent slopes	618	.3	Local alluvial land	364	.2
Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded	1,243	.6	Louisburg coarse sandy loam, 7 to 14 percent slopes	171	.1
Cecil gravelly fine sandy loam, 14 to 25 percent slopes	952	.4	Louisburg coarse sandy loam, 14 to 25 percent slopes	243	.1
Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded	702	.3	Louisburg coarse sandy loam, 25 to 50 percent slopes	226	.1
Cecil clay loam, 2 to 7 percent slopes, severely eroded	810	.4	Madison fine sandy loam, 2 to 7 percent slopes	884	.4
Cecil clay loam, 7 to 10 percent slopes, severely eroded	1,352	.6	Madison fine sandy loam, 2 to 7 percent slopes, eroded	1,323	.6
Cecil clay loam, 10 to 14 percent slopes, severely eroded	2,153	1.0	Madison fine sandy loam, 7 to 10 percent slopes	326	.1
Cecil clay loam, 14 to 25 percent slopes, severely eroded	2,114	1.0	Madison fine sandy loam, 7 to 10 percent slopes, eroded	574	.3
Cecil clay loam, 25 to 40 percent slopes, severely eroded	197	.1	Madison fine sandy loam, 10 to 14 percent slopes	345	.2
Chewacla silt loam	2,891	1.3	Madison fine sandy loam, 10 to 14 percent slopes, eroded	395	.2
Congaree fine sandy loam	3,400	1.6	Madison fine sandy loam, 14 to 25 percent slopes	1,338	.6
Congaree silt loam	994	.5			
Davidson clay loam, 2 to 7 percent slopes, eroded	114	.1			
Davidson clay loam, 7 to 10 percent slopes, eroded	96	(1)			
Georgeville silt loam, 2 to 10 percent slopes, eroded	222	.1			
Georgeville silt loam, 10 to 25 percent slopes	156	.1			

See footnote at end of table.

TABLE 7. *Approximate acreage and proportionate extent of soils*—Continued

Soil	Area	Extent	Soil	Area	Extent
	Acres	*Percent*		*Acres*	*Percent*
Madison gravelly fine sandy loam, 7 to 10 percent slopes	457	0.2	Wadesboro fine sandy loam, 2 to 7 percent slopes	337	0.2
Madison gravelly fine sandy loam, 10 to 14 percent slopes	214	.1	Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded	1,050	.5
Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded	320	.1	Wadesboro fine sandy loam, 7 to 10 percent slopes	337	.2
Madison gravelly fine sandy loam, 14 to 25 percent slopes	398	.2	Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded	678	.3
Madison gravelly fine sandy loam, 25 to 40 percent slopes	510	.2	Wadesboro fine sandy loam, 10 to 14 percent slopes	239	.1
Mayodan fine sandy loam, 2 to 7 percent slopes	2,584	1.2	Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded	333	.2
Mayodan fine sandy loam, 2 to 7 percent slopes, eroded	659	.3	Wadesboro fine sandy loam, 14 to 30 percent slopes	284	.1
Mayodan fine sandy loam, 7 to 10 percent slopes	722	.3	Wehadkee loams	454	.2
Mayodan fine sandy loam, 7 to 10 percent slopes, eroded	694	.3	Wickham fine sandy loam, 2 to 7 percent slopes, eroded	547	.3
Mayodan fine sandy loam, 10 to 14 percent slopes	375	.2	Wickham fine sandy loam, 7 to 14 percent slopes, eroded	244	.1
Mayodan fine sandy loam, 10 to 14 percent slopes, eroded	187	.1	Wilkes sandy loams, 2 to 10 percent slopes	899	.4
Mayodan fine sandy loam, 14 to 40 percent slopes	280	.1	Wilkes sandy loams, 2 to 10 percent slopes, severely eroded	145	.1
Mecklenburg loam, 2 to 7 percent slopes, eroded	247	.1	Wilkes sandy loams, 10 to 14 percent slopes	748	.3
Mecklenburg loam, 7 to 14 percent slopes, eroded	195	.1	Wilkes sandy loams, 10 to 25 percent slopes, severely eroded	208	.1
Mecklenburg loam, 14 to 25 percent slopes, eroded	91	(1)	Wilkes sandy loams, 14 to 25 percent slopes	2,951	1.4
Mixed alluvial land, poorly drained	691	.3	Wilkes sandy loams, 25 to 50 percent slopes	1,487	.7
Mixed alluvial land, well drained	4,861	2.3	Worsham fine sandy loam, 0 to 7 percent slopes	1,500	.7
Moderately gullied land, rolling	351	.2	Water	2,000	.9
Moderately gullied land, hilly	1,649	.8	Other	3,909	1.8
Severely gullied land	134	.1	Total land in county	214,400	100.0
Starr loam, 0 to 7 percent slopes	180	.1			
State fine sandy loam	345	.2			

[1] Less than 0.1 percent.

Appling soils occupy about 5 percent of the county. They occur with Cecil soils in the western and northwestern parts. About two-thirds of their acreage has been cleared and is now used chiefly for row crops. The remaining one-third is in low quality cutover hardwoods, prominently spotted with pure stands of shortleaf and Virginia pines. The pines are commonly on severely eroded or steep areas that were once cultivated.

Appling fine sandy loam, 2 to 7 percent slopes (ApB). This is a deep, well-drained soil with a clayey subsoil. It formed on sloping uplands, in material that weathered from granite, gneiss, and schist.

Profile under a 90-year-old stand of shortleaf pine and a substantial understory of hardwoods (100 feet south of old U.S. Highway 421, 200 yards west of U.S. Highway 21, near Brooks Crossroads):

- A_1 0 to 3 inches, grayish-brown (2.5YR 5/2) fine sandy loam; weak, fine, granular structure; loose when dry; top inch shows weak development of a podzolized (leached) layer; clear, wavy boundary.
- A_2 3 to 8 inches, light olive-brown (2.5Y 5/4) fine sandy loam; weak, medium, granular structure; very friable when moist; clear, wavy boundary.
- B_1 8 to 12 inches, yellowish-brown (10YR 5/6) sandy clay loam; moderate, fine and medium, subangular blocky structure; friable when moist; clear, wavy boundary.
- B_{21} 12 to 16 inches, strong-brown (7.5YR 5/6) sandy clay; moderate, medium, subangular blocky structure; friable when moist; clear, wavy boundary.
- B_{22} 16 to 23 inches, yellowish-red (5YR 5/8) clay; common, medium, distinct mottles of red (2.5YR 5/8) and strong brown (7.5YR 5/8); moderate, medium, subangular blocky structure; firm when moist; thin, patchy clay films; gradual, wavy boundary.
- B_{23} 23 to 31 inches, red (2.5YR 4/8) clay; common, medium, distinct mottles of strong brown (7.5YR 5/6); moderate, medium, subangular blocky structure; friable when moist; distinct, continuous clay films; gradual, wavy boundary.
- B_3 31 to 41 inches, red (2.5YR 4/8) clay; weak, medium, angular blocky structure; friable when moist; thin, patchy clay films; gradual, wavy boundary.
- C 41 to 62 inches +, red (2.5YR 4/8), deeply weathered granite of heavy loam texture; contains many fine mica flakes; few brownish-yellow (10YR 6/8) mottles.

The surface layer ranges from 5 to 12 inches in thickness. The subsoil ranges from strong brown to yellowish red in color and from sandy clay loam to clay in texture; it is friable to firm and is 24 to 36 inches thick. Included with this soil are areas that have a sandy loam surface layer. Also included are small areas of Cecil and Madison fine sandy loams.

This soil is well suited to cultivation. Most of the acreage has been cleared and is now used for brightleaf tobacco and vegetable crops. (Capability unit IIe-1)

Figure 10.—**Erosion on Appling fine sandy loam, 2 to 7 percent slopes, eroded.**

Appling fine sandy loam, 2 to 7 percent slopes, eroded (ApB2).—This soil has a thinner surface layer than Appling fine sandy loam, 2 to 7 percent slopes. In some places cultivation has brought a small amount of subsoil into the plow layer.

The soil is well suited to cultivation. Most of the acreage has been cleared and is now used for brightleaf tobacco and general crops. The erosion hazard is generally slight, but some fields are badly damaged (fig. 10). This soil can be cultivated intensively if simple conservation practices are used. (Capability unit IIe-1)

Appling fine sandy loam, 7 to 10 percent slopes (ApC).—Because it is more sloping than Appling fine sandy loam, 2 to 7 percent slopes, this soil is more likely to erode if used for cultivated crops. It is well suited to general crops, pasture, and trees and is excellent for brightleaf tobacco. If row crops are grown, practices are needed to conserve soil and water. (Capability unit IIIe-1)

Appling fine sandy loam, 7 to 10 percent slopes, eroded (ApC2).—This soil is steeper than Appling fine sandy loam, 2 to 7 percent slopes, and is more susceptible to erosion. Its plow layer is a mixture of the original surface layer and the subsoil. In some cultivated areas the subsoil is exposed.

This soil is well suited to general crops but is not so well suited to brightleaf tobacco as the uneroded Appling fine sandy loams. If cultivated, it needs special conservation practices. It is a good soil for pasture or trees. (Capability unit IIIe-1)

Appling fine sandy loam, 10 to 14 percent slopes (ApD).—This soil is steeper than Appling fine sandy loam, 2 to 7 percent slopes, is generally less deep to the parent material, and is highly erodible.

Row crops can be safely grown on this soil at long intervals, but practices must be used to conserve water and control erosion. This soil should be kept in grass when it is not cultivated. (Capability unit IVe-1)

Appling fine sandy loam, 10 to 14 percent slopes, eroded (ApD2).—This soil is steeper and more eroded than Appling fine sandy loam, 2 to 7 percent slopes, and, therefore, is not so deep to the parent material. Tillage has mixed the surface layer with the sandy clay loam of the subsoil, and in some places the subsoil is exposed.

Because this soil is highly erodible, it ought to be protected by vegetation most of the time. All local crops can be grown. If row crops are grown, practices that will control soil washing and conserve moisture are necessary. The soil is well suited to pasture and trees. (Capability unit IVe-1)

Appling fine sandy loam, 14 to 25 percent slopes (ApE). This is a steep soil that has more rapid runoff than Appling fine sandy loam, 2 to 7 percent slopes, and it has a thinner surface layer and subsoil. Its surface layer is less than 8 inches thick in most places. Its subsoil is less than 28 inches thick.

This soil is not suited to cultivation, but it can be used safely for pasture and trees. Most locally grown hay and pasture plants produce satisfactory yields. (Capability unit VIe-1)

Appling fine sandy loam, 14 to 25 percent slopes, eroded (ApE2).—This soil is steeper and more eroded than Appling fine sandy loam, 2 to 7 percent slopes. Its surface layer is generally less than 8 inches thick, and its subsoil is less than 28 inches. In some places the surface layer is a mixture of subsoil and the original surface layer. In other places the subsoil is exposed.

This soil is not suited to cultivated crops but is suited to pasture and trees. (Capability unit VIe-1)

Appling fine sandy loam, 25 to 45 percent slopes (ApF).—This soil is very steep and has very rapid runoff. It is shallower than Appling fine sandy loam, 2 to 7 percent slopes. In most places it is less than 32 inches deep. In many places the subsoil layers are very weakly defined and range from 24 to 36 inches in thickness. Rock outcrops, stones, and gravel are common.

This soil is not suited to cultivated crops or to pasture. Most of the acreage is now wooded. Fair yields of wood products can be obtained under good management. (Capability unit VIIe-1)

Augusta Series

The Augusta series consists of deep, somewhat poorly drained, friable soils on low terraces. These soils formed in alluvium along the larger streams. They have a dark grayish-brown silt loam surface layer and a mottled yellowish-brown clayey subsoil. Slopes range from 0 to 6 percent but generally are less than 3 percent.

These soils contain moderate amounts of organic matter, and their supply of available plant nutrients is moderately low. They are strongly acid and have a high available water-holding capacity.

The Augusta soils occur with the Altavista and Chewacla soils. They have a darker surface layer than the Altavista soils and a duller, more mottled subsoil. Augusta soils have an accumulation of clay in the subsoil that is generally lacking in Chewacla soils. Because they occupy higher positions, they are slightly better drained than Chewacla soils.

The Augusta soils are not important agricultural soils in the county. Most of the acreage has been cleared and is used for cultivated crops or pasture. Because they are somewhat poorly drained, these soils are limited in crop

suitability. If they are drained and managed well, however, they produce good yields of corn, small grains, lespedeza, and pasture.

Only one soil in the Augusta series is mapped in Yadkin County.

Augusta silt loam (Aʌ).—This is a deep, somewhat poorly drained soil that formed in alluvium on low terraces along the larger streams. The upper part of the subsoil is a yellowish-brown, mottled clay loam.

Profile in a cornfield on bottom land along the Yadkin River, 150 yards south of Deep Creek bridge:

- A_p 0 to 10 inches, brown to dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; many fine roots in the upper 3 inches; abrupt, smooth boundary.
- B_2 10 to 24 inches, yellowish-brown (10YR 5/4) clay loam mottled with brownish yellow (10YR 6/8) and pale brown (10YR 6/3); weak, coarse, subangular blocky structure; friable; common, distinct clay films; clear, wavy boundary.
- B_3 24 to 44 inches, pale-brown (10YR 6/3) silty clay loam mottled with strong brown (7.5YR 5/8); massive (structureless); friable; strong-brown mottles and gray colors increase with depth; gradual boundary.
- C 44 to 52 inches +, grayish-brown (10YR 5/2) heavy fine sandy loam with common, distinct mottlings of yellowish-brown (10YR 5/8); few, small, quartz pebbles; massive (structureless); friable; old stream deposits.

The surface layer ranges from brown to dark grayish brown in color and from 8 to 14 inches in thickness. The subsoil is clay loam to silty clay loam, 30 to 60 inches thick. It is friable to firm and yellowish brown to brownish yellow, variably mottled. The depth to mottles ranges from 16 to 24 inches.

Included with this soil are small areas that have a very fine sandy loam surface layer. Also included are small areas of Altavista fine sandy loam, 0 to 2 percent slopes, and small areas of Chewacla silt loam.

Augusta silt loam occurs in scattered areas, principally along the Yadkin River. About half of the acreage is cultivated, chiefly for corn and small grain, and the rest is in pasture or meadow. This soil is moderately well suited to crops and is in good tilth. If managed well, it produces average yields. Areas that are wet can generally be drained by tile. (Capability unit IIIw-1)

Buncombe Series

The Buncombe series consists of deep, excessively drained soils on flood plains. These soils formed in recent alluvium along the larger streams. They have a brown sandy surface layer, but they lack a B horizon. Slopes range from 0 to 3 percent.

These soils are low in organic matter content, natural fertility, and available water-holding capacity. They are strongly acid.

The Buncombe soils occur with the Congaree soils. They are deeper, lighter colored, and coarser textured than the Congaree soils.

The total acreage in Buncombe soils is small. Most of it has been cleared and is cultivated. These soils are best suited to corn, tobacco, truck crops, and small grains. They are droughty but are in excellent tilth and can be tilled within a wide range of moisture content.

Buncombe loamy sand (Bn).—This is a very deep, excessively drained, very friable soil that lacks a B horizon. The soil formed in recent alluvium and generally is in narrow strips on natural levees along the large streams.

Profile in a cornfield on the Taylor farm, on U.S. Highway 421 south of the Yadkin River bridge:

- A_p 0 to 18 inches, olive brown (2.5Y 4/4) loamy sand; weak, medium and coarse, granular structure; loose; many fine roots; abrupt, smooth boundary.
- C_1 18 to 54 inches, light olive-brown (2.5Y 5/6) loamy sand; massive (structureless); very friable when moist; few coarse lenses; gradual boundary.
- C_2 54 to 70 inches +, yellowish-brown (10YR 5/6) light sandy loam, faintly mottled with strong brown (7.5YR 5/6); massive (structureless); very friable when moist.

The surface layer ranges from grayish brown or brown to olive brown in color, and from 12 to 18 inches in thickness. The substratum is commonly lighter colored and coarser textured than the surface layer, and ranges from 36 inches to 10 feet or more in thickness. Included with this soil are areas that have a surface layer of loamy fine sand and small areas of Congaree fine sandy loam.

Almost all of Buncombe loamy sand has been cleared and is used chiefly for row crops. It can be tilled at any moisture content. Though it is coarse textured, the soil responds well to good management. This soil is suited to a limited range of crops. If it is properly fertilized and rainfall is well distributed or irrigation water is supplied, this soil produces fairly high yields of brightleaf tobacco, corn, and garden crops. (Capability unit IIIs-1)

Buncombe sand (Bs). This is a deep, excessively drained soil on alluvial plains. It is coarser textured than Buncombe loamy sand.

This soil is planted to brightleaf tobacco and other clean-tilled crops and is in pasture and trees. The wooded areas are in river birch, sycamore, and other hardwoods of low quality. In many places the sand is used for construction purposes.

This is a very droughty soil. It leaches severely and is low in fertility. It can be tilled through a wide range of moisture content but is suitable for only a few crops. Sericea lespedeza, small grains, and common lespedeza are the best suited crops. (Capability unit IVs-1)

Cecil Series

The Cecil series consists of deep, well drained, friable soils on uplands in the Piedmont. These soils formed in residuum that weathered from acid crystalline rocks, chiefly granite gneiss and schist. They have a brownish loamy surface layer and a red clayey subsoil. Slopes range from 2 to 40 percent but generally are less than 15 percent.

These soils contain a moderately small amount of organic matter, and the supply of available plant nutrients is generally small. Reaction is medium acid, and the available water-holding capacity is moderately high.

Cecil soils occur with the Appling, Madison, and Lloyd soils. They have a darker surface layer and a redder subsoil than the Appling soils. They are deeper than the Madison soils and contain less gravel and less mica than those soils. Cecil soils have a lighter colored surface layer and a brighter red subsoil than the Lloyd soils, which formed in material weathered from dark-colored, mixed acidic and basic rock.

Cecil soils are extensive in all of Yadkin County except in the extreme southeastern part. About half of the acreage has been cleared and is used chiefly for row crops. The rest is in cutover hardwoods of low quality and smaller stands of shortleaf and Virginia pines. The pines are commonly in severely eroded or steep areas that were once cultivated.

Cecil fine sandy loam, 2 to 7 percent slopes (CfB).—This is a deep, well-drained soil that has a reddish clay subsoil. It formed on uplands in residuum that weathered from granite gneiss and schist.

Profile in an oak-hickory forest (about 6 miles southwest of Brooks Crossroads and 25 yards west of church):

- A_{00} 2 inches to 1 inch, raw hardwood litter.
- A_0 1 to 0 inch, matter, partly decomposed hardwood litter.
- A_1 0 to 3 inches, brown to dark-brown (10YR 4/3) fine sandy loam; moderate, medium, granular structure; very friable when moist; abrupt, smooth boundary.
- A_2 3 to 8 inches, yellowish-brown (10YR 5/8) fine sandy loam; moderate, medium and fine, granular structure; very friable when moist; clear, smooth boundary.
- B_1 8 to 11 inches, yellowish-red (5YR 5/6) fine sandy clay loam; weak, medium to coarse, blocky structure; friable when moist; few, thin, discontinuous clay films; clear, smooth boundary.
- B_2 11 to 32 inches, red (2.5YR 4/6) clay; moderate, medium, subangular blocky structure; firm when moist; distinct, continuous clay films, gradual, wavy boundary.
- B_3 32 to 38 inches, red (2.5YR 4/8) clay loam, with a few streaks or splotches of reddish yellow (7.5YR 6/8); weak, coarse, blocky structure; friable when moist; clay films on most peds; gradual, wavy boundary.
- C_1 38 to 50 inches, red (2.5YR 5/8) clay loam; massive (structureless); friable when moist; highly weathered mica gneiss or schist; a few clay pockets; gradual wavy boundary.
- C_2 50 inches +, partly disintegrated gneiss or schist.

The surface soil ranges from grayish brown to reddish brown in color and from 6 to 12 inches in thickness. The subsoil is friable to firm clay loam to clay and is 30 to 60 inches thick. Included with this soil are areas that have a sandy loam surface layer and small areas of Lloyd, Appling, and Madison soils.

This soil is well suited to all crops grown in the county. Most of the acreage is inaccessible, however, and has been left in trees. (Capability unit IIe 1)

Cecil fine sandy loam, 2 to 7 percent slopes, eroded (CfB2). –This eroded soil has a surface layer that is less than 7 inches thick and is thinner than that of Cecil fine sandy loam, 2 to 7 percent slopes. In many places subsoil material has been mixed with the original surface soil through tillage. Tilth is poorer than in the uneroded Cecil fine sandy loams. Included with this soil are small severely eroded areas where the red clay loam subsoil is exposed.

Most of this soil is in crops or pasture. It is suited to most crops grown in the county but is less well suited to brightleaf tobacco than is Cecil fine sandy loam, 2 to 7 percent slopes. In some places crops are difficult to establish because the surface tends to crust. Because the hazard of erosion is slight in most places, excessive loss of soil and water can be prevented by ordinary management. (Capability unit IIe-1)

Cecil fine sandy loam, 7 to 10 percent slopes (CfC).—This soil is steeper and, in many places, shallower than Cecil fine sandy loam, 2 to 7 percent slopes. It is commonly less than 38 inches deep to parent material. It is an excellent soil for all local crops, and most of it is cultivated. The erosion hazard is severe, but this soil can be tilled safely if management is intense. (Capability unit IIIe-1)

Cecil fine sandy loam, 7 to 10 percent slopes, eroded (CfC2). This sloping soil has lost more of its original surface soil through erosion than has Cecil fine sandy loam, 2 to 7 percent slopes. The surface layer is less than 7 inches thick and, in many places, contains subsoil material brought up through tillage. In some areas, all of the original surface soil has been lost through erosion and the red clay loam subsoil is exposed.

Most of this soil is in crops or pasture. It is suited to all crops generally grown in the county but is in poorer tilth than the uneroded Cecil fine sandy loams. Crops are difficult to establish in some places because the surface is crusted. If this soil is cultivated, it requires the protection of special conservation practices. (Capability unit IIIe-1)

Cecil fine sandy loam, 10 to 14 percent slopes (CfD).—This soil is shallower to parent material than Cecil fine sandy loam, 2 to 7 percent slopes, in most places. Most of it is in trees, which is a good use. This soil is also well suited to pasture. General crops can be grown occasionally if the soil is protected from erosion and water is conserved. (Capability unit IVe-1)

Cecil fine sandy loam, 10 to 14 percent slopes, eroded (CfD2). –This strongly sloping, eroded soil has a surface layer that is 4 to 6 inches thick, and is thinner than that in Cecil fine sandy loam, 2 to 7 percent slopes. In cultivated areas, this layer is a mixture of original surface soil and subsoil material. The depth to parent material is generally less than 30 inches. Included with this soil are some severely eroded areas.

Most of this soil is cultivated. It is subject to severe erosion and is in poorer tilth than Cecil soils that are less eroded. Where the subsoil is exposed, the surface tends to crust and crops are difficult to establish. If it is carefully managed, however, this soil can be used for all crops locally grown. It is well suited to pasture and trees. (Capability unit IVe-1)

Cecil fine sandy loam, 14 to 25 percent slopes (CfE).—This steep soil is shallower to parent material than Cecil fine sandy loam, 2 to 7 percent slopes, and it has a less distinct B horizon. The depth to parent material is generally less than 30 inches and in small areas is only 24 inches. Stones and rock outcrops occur in some places. Generally, this soil is not suited to cultivated crops. It is well suited to pasture or pine trees. (Capability unit VIe-1)

Cecil fine sandy loam, 14 to 25 percent slopes, eroded (CfE2).—This steep soil is shallower and more eroded than Cecil fine sandy loam, 2 to 7 percent slopes, and it has a less distinct B horizon. Where the soil has been cultivated, the original surface layer is mixed with red clay loam that has been brought up from the subsoil. The depth to parent material is less than 30 inches and in small areas is only 24 inches. Rock outcrops and stones occur in some places. Included with this soil are some severely eroded areas.

This soil is not generally suited to cultivation. It is a good soil for grasses and legumes, but these plants are hard to establish in severely eroded areas. The soil is well suited to pine trees. (Capability unit VIe-1)

Cecil fine sandy loam, 25 to 40 percent slopes (CfF). This very steep soil is shallower than Cecil fine sandy loam, 2 to 7 percent slopes, and it has a less distinct B horizon. The depth to parent material is generally less than 30 inches and in some places is only 24 inches. Stones, pebbles, and outcrops of rock are common.

This soil is not suited to cultivated crops. Pasture can be established under careful management and will produce fair yields of forage. This soil is best suited to trees; pines grow fairly well. (Capability unit VIIe-1)

Cecil fine sandy loam, 25 to 40 percent slopes, eroded (CfF2). This steep soil is thinner than Cecil fine sandy loam, 2 to 7 percent slopes, and is more variable in distinctness of its B horizon. The present surface layer is a mixture of the original surface soil and the upper part of the red clay loam subsoil. Rock outcrops, stones, and gravel are common. Included with this soil are areas of Cecil clay loam, 25 to 40 percent slopes, severely eroded. In these areas all of the original surface soil has been washed away.

This soil is not suited to cultivated crops. Under careful management, it is fairly well suited to pasture. The best use for this soil is trees. Pine trees grow fairly well. (Capability unit VIIe 1)

Cecil gravelly fine sandy loam, 2 to 7 percent slopes (CgB).—This soil has small to medium sized pebbles on the surface and in the surface layer but is otherwise similar to Cecil fine sandy loam, 2 to 7 percent slopes. Gravel makes up 20 to 50 percent of the soil material, by volume, but it does not interfere with tillage. This soil is suited to the same kinds of crops as Cecil fine sandy loam, 2 to 7 percent slopes. (Capability unit IIe-1)

Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded (CgB2).—This soil is more eroded than Cecil fine sandy loam, 2 to 7 percent slopes, and its surface layer is gravelly. In other respects it is similar to that soil. It is suited to the same kinds of crops and should be managed in about the same way. (Capability unit IIe-1)

Cecil gravelly fine sandy loam, 7 to 10 percent slopes (CgC).—This soil is more sloping than Cecil fine sandy loam, 2 to 7 percent slopes, and it contains gravel in its surface layer. Mainly because of its slopes, the gravelly soil requires more intensive management than Cecil fine sandy loam, 2 to 7 percent slopes. (Capability unit IIIe-1)

Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded (CgC2).—This soil is more sloping and more eroded than Cecil fine sandy loam, 2 to 7 percent slopes. It has a gravelly surface layer, less than 7 inches thick. In cultivated fields the surface layer has been mixed with subsoil material. Included with this soil are a few small severely eroded areas where the red clay subsoil is at the surface. This soil is suited to all crops that are grown locally but requires management to prevent further erosion. (Capability unit IIIe 1)

Cecil gravelly fine sandy loam, 10 to 14 percent slopes (CgD).—This soil is similar to Cecil fine sandy loam, 2 to 7 percent slopes, but is more sloping and contains gravel in its surface layer. It is suited to all crops that are grown locally, but row crops should be grown only occasionally. Careful management is needed to maintain productivity and to protect this soil from erosion. Probably it is best to use this soil for pasture or trees. (Capability unit IVe-1)

Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded (CgD2). This eroded soil is more strongly sloping than Cecil fine sandy loam, 2 to 7 percent slopes, and it contains gravel in its surface layer. Though it is suited to all crops commonly grown in the county, row crops ought to be grown only occasionally. Intensive management is needed to prevent further erosion. This soil is well suited to pasture and trees. (Capability unit IVe-1)

Cecil gravelly fine sandy loam, 14 to 25 percent slopes (CgE).—Except for its steeper slopes and gravelly surface layer, this soil is similar to Cecil fine sandy loam, 2 to 7 percent slopes. This soil generally is not suited to cultivated crops. Its best use is pasture or pine trees. (Capability unit VIe-1)

Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded (CgE2).—This soil is somewhat similar to Cecil fine sandy loam, 2 to 7 percent slopes, but is steeper, is more eroded, and has a gravelly surface layer. This soil is generally not suited to cultivated crops. Pasture and woodland are its best uses. (Capability unit VIe 1)

Cecil clay loam, 7 to 10 percent slopes, severely eroded (CcC3). This soil originally had a sandy loam surface layer. Through accelerated erosion, the original surface layer has been removed and the subsoil is now exposed. The present plow layer is less friable and more compact than the surface soil of Cecil soils that are less eroded. Consequently, this soil is more susceptible to erosion than those soils. Rills and small gullies are common.

Profile under a 20-year-old stand of shortleaf pine and an understory of povertygrass and broomsedge (1.35 miles east of Brooks Crossroads, 50 feet north of U. S. Highway 421):

- A_0 ½ to 0 inch, a heavy, very dark brown to black mat of raw litter (pine needles) underlain by a thin layer of humus and a thin layer of loose, sandy mineral soil; quartz pebbles as much as 3 inches in diameter are common.
- B_2 0 to 20 inches, red (2.5YR 4/6) clay loam; strong, medium, subangular blocky to angular blocky structure; firm and brittle when moist, hard and brittle when dry; visible sand grains and some mica flakes; few small and medium-sized quartz pebbles; medium-sized roots common in upper 10 inches; gradual boundary.
- B_3 20 to 30 inches, red (2.5YR 4/8) clay loam; weak, medium, subangular blocky structure; friable when moist; material in this layer is noticeably more friable and much less compact than that in the B_2 horizon; few to common angular, dark-colored sand grains and small mica flakes; few small quartz pebbles; clear boundary.
- C 30 to 40 inches, red (2.5YR 4/8) very friable loam mottled with yellowish red (5YR 5/8); many undecomposed minerals and fragments of granite; very gritty.

In many places this soil does not have an A_0 horizon. The subsoil ranges from clay to clay loam in texture and from 20 to 36 inches in thickness. The consistence is generally firm. Structure varies according to how much the soil has been tilled.

This soil is mainly on short, highly erodible slopes within larger, less eroded areas of Cecil soils in crops or pasture. A few large severely eroded areas were once cultivated but have been abandoned and are now idle or in pines.

This soil is in poor tilth and has a low water-holding capacity. It can be tilled within only a narrow range of

moisture content. A good seedbed is difficult to prepare, and crops are hard to establish. The soil is best suited to grasses and legumes or to trees, but it can be safely cultivated at long intervals. Under good management, some areas will produce fair yields of crops. (Capability unit IVe-5)

Cecil clay loam, 2 to 7 percent slopes, severely eroded (CcB3).—This soil is less strongly sloping and is less gullied than Cecil clay loam, 7 to 10 percent slopes, severely eroded. It is in poor tilth, has slow infiltration and its surface tends to crust when drying. Under good management, however, this soil can be used for small grains, lespedeza, corn, and milo. It is poorly suited to brightleaf tobacco. It produces fair yields of grasses and of alfalfa and other legumes but is a poor soil for pine trees. Intensive management is required to prevent further erosion. (Capability unit IIIe-5)

Cecil clay loam, 10 to 14 percent slopes, severely eroded (CcD3).—This soil is more strongly sloping than Cecil clay loam, 7 to 10 percent slopes, severely eroded. Shallow gullies and a few deep ones have formed.

This is a poor soil for cultivation, but it can be safely cultivated occasionally. It is fairly well suited to small grains and grasses and to lespedeza, alfalfa, and other legumes. It is poorly suited to corn and is not suited to brightleaf tobacco. Pine trees grow slowly. Partly because tilth is poor and infiltration is slow, crops are difficult to establish. This soil requires intensive management to prevent further erosion. (Capability unit IVe-5)

Cecil clay loam, 14 to 25 percent slopes, severely eroded (CcE3).—This soil is steeper and shallower than Cecil clay loam, 7 to 10 percent slopes, severely eroded. Its depth to the substratum is generally less than 24 inches. Many shallow gullies and a few deep ones have formed.

This soil is not suited to cultivated crops. It is fairly well suited to most grasses and legumes that are locally grown for hay and pasture. Careful management is needed to obtain fair yields of these crops. In wet seasons livestock ought to be removed from pastures, and farming operations delayed in hayfields, because the soil is in poor tilth and is easily compacted. The soil surface tends to crust as it dries. This soil is suited to pines, but they grow slowly. (Capability unit VIe-2)

Cecil clay loam, 25 to 40 percent slopes, severely eroded (CcF3).—This soil is much steeper and is shallower than Cecil clay loam, 7 to 10 percent slopes, severely eroded, and it has a profile with more variable characteristics. In many areas this soil is gravelly. Stones and outcrops of bedrock are numerous.

This soil is not suited to cultivated crops or to pasture. It ought to be reforested or planted to shrubs and vines for wildlife. Though pines grow slowly, these trees will help to check erosion after they are established. (Capability unit VIIe-2)

Cecil loam, 7 to 10 percent slopes (CIC).—This is a deep, well-drained soil that has a clay or silty clay subsoil. It formed on uplands in residuum that weathered from fine-grained gneiss and schist.

Profile under a cutover stand of oak and hickory on land that has never been cleared (on the Isaac Brown farm in southeastern Yadkin County):

A_{00}	2 inches to 1 inch, litter of hardwood leaves and a few pine needles.
A_0	1 to 0 inch, partly decomposed leaf litter and small amount of mineral soil.
A_1	0 to 1 inch, very dark grayish-brown (10YR 3/2) loam; moderate, fine, granular structure; very friable; abrupt, wavy boundary.
A_2	1 to 7 inches, yellowish-brown (10YR 5/4) loam; moderate, medium, granular structure; friable; clear, wavy boundary.
B_1	7 to 13 inches, yellowish-red (5YR 4/6) clay loam; moderate, medium, subangular blocky structure; friable; thin, faint, discontinuous clay films on a few peds.
B_{21}	13 to 21 inches, red (2.5YR 5/6) clay or silty clay; moderate, medium, subangular blocky structure; firm; distinct, continuous clay films; clear, wavy boundary.
B_{22}	21 to 52 inches, red (2.5YR 4/8) clay or silty clay; moderate, medium, subangular blocky structure; firm; distinct, continuous clay films; clear, wavy boundary.
B_3	52 to 60 inches, red (2.5YR 4/8) clay loam or silty clay loam with common, fine, distinct mottles of reddish yellow; moderate, medium, angular blocky structure; firm; clay films distinct on vertical peds, thin or absent on horizontal peds; few, soft, weathered schist fragments; clear, wavy boundary.
C_1	60 to 65 inches, mottled yellowish-red, reddish-yellow, and red silt loam; weathered, nonmicaceous, fine-textured schist; few, purplish, hard schist fragments.
C_2	65 to 74 inches, deeply weathered, extremely fine textured, nonmicaceous schist.

The surface soil ranges from yellowish brown to reddish brown in color and from 5 to 9 inches in thickness. The subsoil ranges from clay loam to silty clay in texture, from friable to firm in consistence, and from 36 to 60 inches in thickness. Included with this soil are small areas of very fine sandy loam and silt loam and small areas of Lloyd soils. Cecil loam, 7 to 10 percent slopes, is well suited to cultivation. (Capability unit IIIe 1)

Cecil loam, 2 to 7 percent slopes, eroded (CIB2).—This eroded soil is less sloping than Cecil loam, 7 to 10 percent slopes. In most places it has lost about one-third of its original surface layer through erosion. The remaining surface soil has been mixed with the top part of the subsoil through tillage, which has added a small amount of clay to the plow layer. The plow layer is reddish yellow.

This soil is well suited to cultivated crops. Most of it has been cleared and is used for brightleaf tobacco and general crops. (Capability unit IIe 1)

Chewacla Series

The Chewacla series consists of deep, somewhat poorly drained, friable soils on first bottoms. These soils formed in alluvium along the major drainageways and streams. They have a dark-brown loamy surface layer, and in most places, clay has not accumulated in the subsoil. Slopes range from 0 to 2 percent.

These soils are moderately well supplied with organic matter and with plant nutrients. They are strongly acid and have a high available water-holding capacity.

The Chewacla soils occur with the Congaree, Augusta, and Wehadkee soils. They are darker colored, finer textured, and more poorly drained than the Congaree soils. They lack a bright-colored, well-developed B horizon like that in the Augusta soils. Chewacla soils have a browner surface layer than the Wehadkee soils, and they are generally deeper and better drained.

These are important agricultural soils. Though they are subject to flooding, most of the acreage has been

cleared and is used for crops and pasture. If flooding is controlled and drainage is improved, these soils are excellent for corn, small grains, lespedeza, and pasture.

Only one soil in the Chewacla series is mapped in Yadkin County.

Chewacla silt loam (Cp). -This soil is deep, somewhat poorly drained, and friable. It formed in alluvium, on flats or in depressions, on the bottom lands along principal streams.

Profile in a fescue meadow (100 yards north of U.S. Highway 421 and 200 yards northeast of Forbush Creek bridge):

- A_p 0 to 12 inches, dark-brown silt loam (7.5YR 3/2); moderate, fine and medium, granular structure; friable; many fine roots; clear, wavy boundary.
- C_1 12 to 20 inches, brown to dark-brown (7.5YR 4/4) heavy silt loam, distinctly mottled with yellowish red (5YR 4/8) and dark grayish brown (10YR 4/2); weak, coarse, subangular blocky structure to massive (structureless); friable; few, thin, discontinuous sand lenses; many fine roots; clear, wavy boundary.
- C_2 20 to 33 inches, dark-gray (10YR 4/1) silt loam, distinctly mottled with dark brown (10YR 4/3); massive (structureless); friable; few sand lenses; many fine and medium roots; abrupt, wavy boundary.
- C_3 33 to 42 inches +, very dark gray (10YR 3/1) heavy silt loam to light clay loam with distinct mottles of dark brown and black; massive (structureless); firm; discontinuous sand lenses; few medium and fine roots; few small, rounded, quartz pebbles.

The surface layer ranges from brown to very dark grayish brown in color and from 10 to 18 inches in thickness. It is underlain by a dark-gray to gray layer that has few to common mottles and is 24 to 48 inches thick. Included with this soil are small areas of Congaree silt loam and Augusta silt loam. Also included are areas of fine sandy loam.

Most of this soil has been cleared and is in row crops, small grains, and pasture. The uncleared areas are generally inaccessible and are in low-quality hardwoods. Except in pocketed areas, this soil can be drained easily with tile. It responds well to good management. In most places, however, fairly good yields of pasture can be obtained without drainage. This soil is suited to only a moderate range of crops. (Capability unit IIIw-1)

Congaree Series

The Congaree series consists of deep, well-drained, very friable soils on first bottoms. These soils formed in recent alluvium along the larger streams. They have a brown loamy surface layer and lack an accumulation of clay in the subsoil. Slopes range from 0 to 3 percent.

These soils contain a moderately small amount of organic matter and available plant nutrients. They are medium acid and have a medium available water-holding capacity.

The Congaree soils occur with the Chewacla, Buncombe, and State soils. They are coarser textured and somewhat lighter colored than the Chewacla soils and, unlike those soils, are not distinctly mottled. They are finer textured and darker colored than Buncombe soils. The Congaree soils are in lower positions than are State soils, which have more distinct horizons than the Congaree.

Though their total area is small, these soils are among the best in the county for farming. Practically all of the acreage has been cleared and is used chiefly for row crops. The soils are subject to occasional flooding but are suited to most crops commonly grown in the county. They can be tilled throughout a wide range of moisture content and respond well to good management.

Figure 11.—Flood damage to tobacco on Congaree fine sandy loam.

Congaree fine sandy loam (Cr). This is a deep, well-drained, friable soil on flood plains. It formed in recent alluvium that has good surface drainage. This soil lacks a developed B horizon.

Profile in a cultivated field (west of the Yadkin River, north of the bridge on U.S. Highway 421):

- A_p 0 to 9 inches, brown (10YR 4/3) light fine sandy loam; weak, fine, granular structure; very friable when moist; definitely a plow layer; abrupt, smooth boundary.
- C_1 9 to 22 inches, dark grayish-brown (10YR 4/2) loamy fine sand; massive (structureless); very friable when moist; clear, smooth boundary.
- C_2 22 to 36 inches, dark yellowish-brown (10YR 4/4) loam; massive (structureless); friable when moist; gradual, wavy boundary.
- C_3 36 to 52 inches +, yellowish-brown (10YR 5/8) fine sandy loam; massive (structureless); very friable when moist.

The surface layer ranges from dark brown to olive brown in color and from 8 to 18 inches in thickness. The underlying material ranges from 3 to 10 feet in thickness and commonly is coarser textured and lighter colored than the surface layer. Included with this soil are small areas of Buncombe soils and State soils.

Practically all of this soil has been cleared and is cropped, chiefly to corn, small grains, and truck crops. The soil is well suited to cultivation but is subject to flooding (fig. 11). Some areas are rarely flooded; others are flooded as often as every 3 to 5 years. (Capability unit IIw-1)

Congaree silt loam (Cs).—This soil has a darker colored surface layer than Congaree fine sandy loam and finer textured, darker colored underlying material. Consequently, Congaree silt loam is more likely to be mottled faintly at a depth of 36 inches or more. It is farther from streams than Congaree fine sandy loam, but it lies in flat or depressed areas and is more susceptible to flooding.

It has a higher available water-holding capacity than the fine sandy loam. Included with this soil are small areas of Congaree fine sandy loam and Chewacla silt loam.

This soil is very well suited to cultivation. Most of the acreage has been cleared and is used for crops, chiefly corn and small grains. (Capability unit IIw-1)

Davidson Series

The Davidson series consists of deep, well-drained, friable soils on the uplands of the Piedmont. These soils formed in residuum that weathered from basic igneous rock, chiefly diorite. They have a dark reddish brown clay loam surface layer and a dark red clayey subsoil.

These soils contain a moderately low amount of organic matter and a moderate amount of available plant nutrients. They are slightly acid and have a high available water-holding capacity.

The Davidson soils are associated with the Cecil and Wadesboro soils and are darker colored through the profile than those soils.

The Davidson soils in Yadkin County occur mainly in a small area in the south-central part of the county, about 3 miles east of Lone Hickory. Practically all of this acreage has been cleared and is used chiefly for row crops.

Davidson clay loam, 2 to 7 percent slopes, eroded (DaB2).—This is a deep, well-drained soil that has a red clay subsoil. It formed in residuum that weathered from dark-colored, crystalline igneous rock on the sloping parts of the uplands.

Profile under a stand of oak and hickory (in the south-central part of Yadkin County north of the Davie County line, west of Lone Hickory Road, on Lucy Booe's farm):

- A_p 0 to 6 inches, dark reddish-brown (5YR 3/4) clay loam; moderate, fine, granular structure; hard when dry and friable when moist; few quartz pebbles and some hard fragments of basic rock; many fine roots; signs of biological activity; abrupt, smooth boundary.
- B_1 6 to 26 inches, dark-red (10R 3/6) clay; strong, medium and coarse, subangular blocky structure; firm when moist; common clay films; clear, wavy boundary.
- B_2 26 to 38 inches, dark-red (2.5YR 3/6) clay; moderate, fine and medium, angular blocky structure; firm when moist; distinct, common clay films; clear, wavy boundary.
- B_3 38 to 44 inches, reddish-brown (5YR 4/4) clay loam, streaked with strong brown (7.5YR 5/8); massive (structureless); friable when moist; some soft weathered mineral crystals; a few hard fragments of basic rock; gradual boundary.
- C 44 to 54 inches, deeply weathered, basic rock of loam or silt loam texture; variegated colors of red, yellowish red, strong brown, pale brown, and black; very friable.

The surface layer ranges from dark reddish brown to dark brown in color and from 5 to 8 inches in thickness. The subsoil ranges from 24 to 48 inches in thickness and from firm to friable in consistence. Included with this soil are some small areas that have a loam surface layer and small areas of Cecil and Wadesboro soils.

This soil is well suited to cultivation, but it can be tilled only within a moderate range of moisture content. Most of the acreage has been cleared and is used chiefly for corn, small grains, and hay. (Capability unit IIe-2)

Davidson clay loam, 7 to 10 percent slopes, eroded (DaC2).—This soil is more strongly sloping than Davidson clay loam, 2 to 7 percent slopes, eroded. It is well suited to cultivation, but it is susceptible to severe erosion and can be tilled under only a moderate range of moisture content. It is well suited to all crops grown locally except bright tobacco. This soil is probably the best soil in the county for alfalfa. It is excellent for corn, small grains, and lespedeza. If cultivated, this soil should be managed so that the loss of soil and water is controlled. It is well suited to pasture and to trees. (Capability unit IIIe-2)

Georgeville Series

The Georgeville series consists of deep, well-drained, friable soils on the uplands of the Piedmont. These soils formed in residuum that weathered from Carolina slate. They have a brown to dark-brown silt loam surface layer and a red silty clay subsoil. Dominant slopes are less than 20 percent, but slopes range from 2 to 25 percent.

These soils contain a moderately small amount of organic matter and available plant nutrients. They are medium acid and have a high available water-holding capacity.

The Georgeville soils occur with the Mayodan and Wadesboro soils and are shallower, are more gravelly, and have more outcrops of bedrock than those soils. Georgeville soils have a redder subsoil than the Mayodan soils and a finer textured surface layer than the Wadesboro soils.

In Yadkin County, Georgeville soils are only in a small area northeast of Courtney. About one-third of the acreage has been cleared and is used chiefly for row crops. The rest is relatively steep and is in cutover hardwoods.

Georgeville silt loam, 2 to 10 percent slopes, eroded (GeC2).—This is a deep to moderately deep, well-drained soil that has a red silty clay subsoil. It formed on uplands in residuum that weathered from Carolina slate.

Profile under a cutover stand of Virginia pine (on the east bank of a gravel road, 0.5 mile north of Courtney):

- A_p 0 to 7 inches, brown to dark-brown (7.5YR 4/4) silt loam; weak, medium, granular structure; very friable; few small fragments of slate and common quartz pebbles; many fine roots; abrupt, wavy boundary.
- B_1 7 to 13 inches, yellowish-red (5YR 5/8) silty clay loam; moderate, medium and fine, subangular blocky structure; friable; few fragments of slate and few quartz pebbles; clear, wavy boundary.
- B_2 13 to 30 inches, red (2.5YR 4/8) silty clay; strong, medium and fine, subangular blocky structure; firm; prominent, continuous clay films; few medium roots; clear, wavy boundary.
- B_3 30 to 35 inches, yellowish-red (5YR 5/6) silty clay loam mottled with reddish yellow (7.5YR 7/6) and red (10YR 4/6); mottles in horizontal arrangement related to original foliation and fracture planes of the parent rock; weak, coarse, subangular blocky structure to massive (structureless); friable; thin, discontinuous clay films; gradual boundary.
- C_1 35 to 49 inches, mottled pink and pale-brown silt loam; deeply weathered; few tongues of material from B_3 horizon.
- C_2 49 to 79 inches +, mottled dusky red and pale brown, deeply weathered; silt texture.

The surface layer ranges from brown to dark brown in color, and from 4 to 8 inches in thickness. In some areas the surface layer is gravelly and may contain a few small outcrops of bedrock. The subsoil ranges from red

to yellowish red in color; it is firm to friable and is 18 to 36 inches thick. Included with this soil are a few small areas that have a fine sandy loam surface layer, and small areas of Mayodan and Wadesboro soils.

Most of the cleared acreage is used for corn, small grains, and hay. This soil is suited to most crops grown locally, but it is not well suited to brightleaf tobacco. Small areas are gravelly, but the gravel does not restrict tillage with modern implements. This soil can be tilled within a wide range of moisture content, and it responds well to good management. (Capability unit IIIe-1)

Georgeville silt loam, 10 to 25 percent slopes (GeE). This soil is steeper but less eroded than Georgeville silt loam, 2 to 10 percent slopes, eroded. On the stronger slopes it is shallower than that soil. The surface layer, generally 6 inches or more thick, has not been mixed with subsoil material in tillage. Slate fragments occur in some places.

This soil normally is not suited to cultivated crops. If carefully managed to control erosion, however, the less sloping areas can be used for small grain, lespedeza, and milo, and an occasional crop of corn or brightleaf tobacco can be planted. This soil is fairly well suited to pasture and trees. (Capability unit VIe-1)

Halewood Series

The Halewood series consists of moderately deep, well-drained, friable soils on mountain slopes and foothills. These soils formed in residuum that weathered from acid crystalline rocks, chiefly granite gneiss. They have a loamy surface layer and a yellowish-red to yellowish-brown light clayey subsoil. Slopes range from 7 to 40 percent but generally are greater than 15 percent.

These soils have a moderately low content of organic matter, are low in available plant nutrients, and are medium acid. They have a medium available water-holding capacity.

The Halewood soils occur with the Hayesville and Louisburg soils. They are lighter colored than the Hayesville soils. Halewood soils are deeper, darker colored, and generally finer textured than the Louisburg soils, which do not have a well-defined profile.

In Yadkin County these soils are only in the northwestern corner, on the tip of the Brushy Mountains. Most of the acreage is in cutover hardwoods of low quality. The rest has been cleared and is chiefly used for row crops and orchards.

Halewood stony sandy loam, 25 to 40 percent slopes (HaF).—This is a moderately deep, well drained, permeable soil on the intermountain uplands. It formed in residuum that weathered from granite gneiss and schist and has a yellowish-brown to strong-brown clay loam subsoil.

Profile of virgin soil under a cutover stand of oak and hickory (in the Brushy Mountains, on the Highland Orchard Road, 0.4 mile east of Swan Creek Road):

A_0 1 to 0 inch, dark-gray to black, decomposed hardwood litter tending to become humus.

A_1 0 to 1 inch, dark-gray (5Y 4/1) stony sandy loam; weak, fine, granular structure; very friable; abrupt boundary.

A_2 1 to 9 inches, pale-yellow (2.5Y 7/2) or olive (5Y 5/3) fine sandy loam; weak, fine and medium, granular structure; very friable; common fine roots; clear, wavy boundary.

B_{21} 9 to 15 inches, yellowish-brown (10YR 5/6) to strong-brown (7.5YR 5/6) sandy clay loam; moderate, medium, subangular blocky structure; friable; distinct, patchy clay films; material from A_2 horizon in root channels and crevices; common medium and fine roots; clear, wavy boundary.

B_{22} 15 to 28 inches, strong-brown (7.5YR 5/6) clay loam; moderate, medium, subangular blocky structure; firm to friable; distinct, patchy clay films; clear, wavy boundary.

B_3 28 to 31 inches, strong-brown (7.5YR 5/6) light clay loam with few medium and faint mottles of yellowish brown and yellowish red; weak, medium, angular blocky structure; some relic rock; friable; clear, wavy boundary.

C_1 31 to 43 inches, yellowish-brown micaceous loam to fine sandy loam; deeply weathered granite gneiss.

C_2 43 inches +, weathered granite gneiss containing fragments of hard rock.

The surface layer ranges from dark gray to dark grayish brown in color and from 5 to 10 inches in thickness. The number and size of stones on the surface vary. In some places there are a few large boulders and many small stones and pebbles, and in other places there are many small and medium-sized stones. The subsoil ranges from yellowish red to brown in color, from clay loam to sandy clay loam in texture, and from 15 to 30 inches in thickness. Included with this soil are small areas of fine sandy loam and stony fine sandy loam, and areas of Hayesville and Louisburg soils.

Most of this soil is in hardwoods of low quality. The soil is not suited to cultivated crops, but it can be used safely for orchards if protected by sod vegetation and if roads and tillage are on the contour. (Capability unit VIIe 2)

Halewood stony sandy loam, 7 to 10 percent slopes (HaC).—This soil is on much milder slopes than Halewood stony sandy loam, 25 to 40 percent slopes. The surface layer is 7 to 10 inches thick; the subsoil is 24 to 30 inches thick.

Most of this soil is in orchards or is wooded. It is an excellent soil for apple trees and a fair soil for brightleaf tobacco, corn, and other local crops. Stones interfere with tillage but do not prevent it. Where the soil is cultivated, careful management is needed to control erosion. (Capability unit IIIe 6)

Halewood stony sandy loam, 10 to 14 percent slopes (HaD). This soil is not so steep as Halewood stony sandy loam, 25 to 40 percent slopes. It occurs only in small areas and is mostly wooded or in orchards. If managed to control erosion, this soil is fairly well suited to cultivated crops. It is suited to pasture and hay, but stones prevent the use of heavy tillage implements and interfere with seeding, mowing, and harvesting. This is a good soil for apple trees. (Capability unit IVe-4)

Halewood stony sandy loam, 14 to 25 percent slopes (HaE). This soil is not so steep as Halewood stony sandy loam, 25 to 40 percent slopes. Most of this soil is wooded or in orchards. It is not suited to cultivated crops, but it can be used safely for orchards if it is protected by grass. It is suited to pasture and hay, although these crops are difficult to maintain and harvest because of the stones. (Capability unit VIe-3)

Hayesville Series

The Hayesville series consists of moderately deep, well-drained friable soils on mountain slopes and foothills. These soils formed in residuum that weathered from granite, mica gneiss, gneiss, and schist. Except in severely eroded areas, they have a very dark grayish-brown fine sandy loam surface layer. The subsoil is red clay loam. Slopes range from 7 to 40 percent but generally are greater than 15 percent.

These soils are moderately low in organic matter and available plant nutrients. They are medium acid and have a medium to high available water-holding capacity.

The Hayesville soils occur with the Cecil, Halewood, and Louisburg soils. They are darker colored and generally shallower than the Cecil soils and have a slightly coarser textured and a more friable subsoil. They have a redder subsoil than the Halewood soils and are darker colored through the profile. Hayesville soils are deeper, darker colored, and generally finer textured than Louisburg soils, which lack a well-defined subsoil.

In Yadkin County these soils are mainly on the tip of the Brushy Mountains and on the steep north-facing slopes of the Yadkin River along the northern boundary. Most of the acreage is in cutover hardwoods of low quality. Many fields that were once cultivated are now in shortleaf and Virginia pines.

All of the acreage of Hayesville soils in this county is mapped in undifferentiated units with Cecil soils.

Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes (CnE). These well-drained soils on mountain slopes and foothills formed in residuum that weathered from granite, mica gneiss, gneiss, and schist. The Hayesville soil is commonly on the steeper slopes; the Cecil soil is on the more gentle slopes. Through their profiles, the two soils are somewhat similar to each other in color and texture. The Hayesville soil, however, is shallower than the Cecil soil and has a darker colored surface layer and generally a slightly coarser textured and more friable subsoil. In some places, the texture of the subsoil in these soils is about alike.

Because of their similarity and intricate pattern, these soils have been mapped together. About 80 percent of the acreage is Hayesville soil. Many areas are only Hayesville soil, and a few are only Cecil. In some areas both soils occur.

Turn to the Cecil series for a description of a profile of a Cecil fine sandy loam.

Profile of a Hayesville soil with a fine sandy loam surface layer on a slope of 14 to 25 percent, in a cutover stand of oak and hickory (on west roadbank of Little Mountain Road, one half of a mile southwest of Shady Grove Baptist Church, at an elevation of 1,200 feet, in the Brushy Mountains) :

- A_0 1 to 0 inch, undecomposed hardwood litter; bottom part appears to be changing into a thin layer of humus.
- A_1 0 to 1 inch, very dark grayish-brown (10YR 3/2) fine sandy loam; weak, fine, granular structure; very friable; few small stones and common gravel; many fine roots; abrupt, smooth boundary.
- A_2 1 to 7 inches, brown to dark-brown (7.5YR 4/4) fine sandy loam; weak, medium, granular structure; very friable; few small quartz pebbles; many fine roots; few fine mica flakes; clear, wavy boundary.
- B_1 7 to 11 inches, yellowish-red (5YR 4/6) light clay loam; weak, medium, subangular blocky structure; friable; common fine and few medium roots; few mica flakes and few small quartz pebbles; clear, wavy boundary.
- B_2 11 to 22 inches, red (2.5YR 4/6) clay loam; moderate, fine and medium, subangular blocky structure; firm to friable; few medium roots; few mica flakes and few small quartz pebbles; clear, wavy boundary.
- B_3 22 to 28 inches, yellowish-red (5YR 4/8) clay loam to loam with common, medium, faint mottles of red (2.5YR 4/6); weak, coarse, angular blocky structure or massive (structureless); friable; common, fine mica flakes; gradual boundary.
- C_1 28 to 36 inches, yellowish-red material of heavy loam texture; deeply weathered from granite gneiss; massive (structureless); few to common, fine mica flakes; clear, wavy boundary.
- C_2 36 inches +, yellow material weathered from granite gneiss; fine sandy loam texture.

The surface layer ranges from very dark grayish brown to reddish brown in color and from 6 to 8 inches in thickness. The surface is stony, but the degree of stoniness varies from place to place. Some areas are almost free of stones; other areas have a moderate number of pebbles and a few large boulders on the surface. Outcrops of bedrock are common. The subsoil is red to yellowish red, friable to firm, and is from 19 to 36 inches thick. In many places the subsoil contains mica that ranges in quantity from very little to almost as much as there is in the Madison soils.

These soils are chiefly on the tip of the Brushy Mountains and along the northern boundary of the county. Most of the acreage is in cutover hardwoods of low quality. Some old abandoned fields are in shortleaf and Virginia pines. These soils are suited to pasture, orchards, and forest trees. (Capability unit VIe-1)

Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded (CnC2).—These soils are less sloping but are more eroded than Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. About 75 percent of the mapping unit is Hayesville soil. In cultivated fields the plow layer is a mixture of the original surface layer and the upper part of the subsoil. In small included areas the surface layer consists of red clay loam subsoil material.

These soils are fairly well suited to most crops grown locally. They are in poorer tilth than soils in the uneroded mapping units, however, and the erosion hazard is severe. If they are cultivated, they need practices to conserve soil and water. These soils are well suited to pasture, orchards, and forest trees. (Capability unit IIIe-1)

Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded (CnD2).—These soils are less strongly sloping but are more eroded than Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. About 75 percent of the mapping unit is Hayesville soil. The plow layer consists of original surface soil mixed with material from the subsoil. In some included spots the surface layer consists of red clay loam subsoil material. These inclusions are in poor tilth.

These soils can be used occasionally for cultivated crops. If they are managed carefully to control erosion, they are fairly well suited to corn, wheat, oats, and lespedeza. The soils are well suited to pasture, orchards, and forest trees. (Capability unit IVe-1)

Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded (CnE2). These eroded soils vary more in thickness of their surface layer than do Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. The surface layer contains material brought from the subsoil in cultivation. Tilth is poorer in these soils than in the uneroded Hayesville and Cecil fine sandy loams. In some included spots clay loam subsoil material is exposed.

These soils are not suited to cultivated crops, but they are suited to orchards, pasture, and forest trees. (Capability unit VIe-1)

Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes (CnF).—These soils are steeper than Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. Nearly all of the mapping unit is Hayesville soil. These soils are best suited to trees; they are not suited to cultivation. Pasture is difficult to establish on the steep slopes. (Capability unit VIIe-1)

Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded (CnF2).—These eroded soils have a thinner surface layer than Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. Much of the original surface soil has been removed through erosion, and the present surface layer contains subsoil material. In small inclusions the clay loam subsoil is exposed. Nearly all of this mapping unit is Hayesville soil.

Most of this mapping unit is now in pine trees. The best use is woodland. (Capability unit VIIe-1)

Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded (CmD3).—These soils have had nearly all their original surface layer washed away, but in other respects they are similar to Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. In most places the present surface layer is reddish clay loam, but in a few places it contains various amounts of fine sandy loam. Shallow gullies have formed, and stones and rock outcrops occur. About 70 percent of the mapping unit is Hayesville soil.

These soils are fairly well suited to small grains and grasses and to lespedeza and other legumes. They can be cultivated occasionally, but they are poorly suited to clean-tilled crops. Their tilth is poor, the surface crusts, and the soils are compacted easily by heavy farm implements. These soils should be protected from erosion by the cover provided in suitable cropping systems rather than by terracing or other structural practices. (Capability unit IVe-5)

Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded (CmE3).—These soils have had all of their original surface layer washed away, but in other respects they are similar to Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes. The present surface layer is reddish clay loam. Shallow gullies have formed, and there are stones on the surface as well as outcrops of rock.

These soils are not suited to cultivated crops. They are fairly well suited to grasses and legumes and to pine trees. Careful management of these clayey soils is needed to prevent serious crusting and compaction of the surface layer. Pines grow slowly after they are established, but they help to control further erosion. (Capability unit VIe-2)

Hiwassee Series

The Hiwassee series consists of deep, well-drained, friable soils on high terraces above the Yadkin River. These soils formed in old alluvium, which was deposited when the river was at higher elevations. They have a dark-brown or reddish-brown, loamy surface layer and a dark-red clay subsoil. Slopes range from 2 to 7 percent.

These soils contain a moderate amount of organic matter and a moderately large amount of available plant nutrients. They are slightly acid and have a high water-holding capacity.

The Hiwassee soils occur with the Wickham and Altavista soils. They are darker colored and generally finer textured than Wickham and Altavista soils, and they lack the mottles of the Altavista soils.

Only one Hiwassee soil is mapped in this county. It occurs in small areas on the high river terraces.

Hiwassee loam, 2 to 7 percent slopes, eroded (HwB2).—This is a deep, well drained soil with a dark-red, clayey subsoil. It occurs on river terraces along the principal streams.

Profile in a cultivated field (in the eastern part of the county, 0.5 mile north of U.S. Highway 421 on Taylor farm, 25 yards south of red tool shed on a high terrace of the Yadkin River):

A_p 0 to 8 inches, dark-brown (7.5YR 3/2) loam; weak, coarse, granular structure; firm when dry, very friable when moist; many small and medium, rounded quartz pebbles; abrupt, smooth boundary.

B_{21} 8 to 17 inches, dark-red (2.5YR 3/6) heavy clay loam faintly mottled with yellowish red (5YR 4/8); weak, moderate, subangular blocky structure; friable; thin, patchy clay films; uniform texture imparts smooth feel; clear, wavy boundary.

B_{22} 17 to 54 inches, dark-red (2.5YR 3/6 or 10R 3/6) smooth, heavy clay; strong, moderate, angular blocky structure; firm when moist, very sticky when wet; common, distinct clay films; platy structure and common, rounded pebbles in lower 10 inches of horizon.

The surface layer ranges from brown to dark reddish brown in color and from 6 to 12 inches in thickness. In small scattered areas the surface layer contains rounded gravel. The subsoil is dusky red to dark red and is 48 to 60 inches thick. Included with this soil are small areas that have a clay loam surface layer, and small areas of Wickham soils.

This soil is well suited to cultivated crops. Most of the acreage is in row crops and pasture. Because the surface layer is fine textured, this soil has only moderately good workability. It responds well to good management, however, and is suited to a moderate range of crops. It is very well suited to corn, small grains, and alfalfa. (Capability unit IIe-2)

Iredell Series

The Iredell series consists of moderately deep, moderately well drained soils on the milder slopes of the Piedmont Uplands. They are heavy, very firm soils with a grayish brown loamy surface layer and an olive brown, heavy, plastic clay subsoil. These soils formed in residuum that weathered from dark colored basic rocks. Slopes range from 2 to 14 percent but are generally less than 10 percent.

These soils contain a moderately small amount of organic matter and a moderately large amount of available plant nutrients. They are slightly acid and have a medium available water-holding capacity.

The Iredell soils occur with the Mecklenburg, Lloyd, and Mayodan soils. They are more olive in color than those soils and have a finer textured subsoil. They are not so deep as Lloyd and Mayodan soils, and they generally are finer textured than Mayodan soils.

In Yadkin County Iredell soils are only in a small area in the southeastern corner, between Courtney and Huntsville. Most of the acreage is in cutover hardwoods of low quality, and the rest is chiefly used for row crops and hay.

These soils have a slowly permeable subsoil and are highly erodible. On milder slopes they are suited to a moderate range of shallow-rooted crops.

Iredell fine sandy loam, 2 to 7 percent slopes (IrB).—This is a moderately deep, moderately well drained soil on uplands. It formed in residuum that weathered from dark-colored basic rocks; it has an olive-colored plastic clay subsoil.

Profile under a pine-oak forest (3 miles east of Courtney):

- A_1 0 to 6 inches, dark grayish-brown (2.5Y 4/2) to grayish-brown (2.5Y 5/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; common concretions the size of small buckshot on surface; clear, smooth boundary.
- A_2 6 to 11 inches, light olive-gray (5Y 6/2) fine sandy loam; weak, coarse, granular structure; friable when moist; common fine roots and few medium roots; abrupt, smooth boundary.
- B_2 11 to 22 inches, olive-brown (2.5YR 4/4) heavy clay; massive (structureless); very firm when moist; mass of roots on top of horizon, and some fine roots in shrinkage cracks; gradual, smooth boundary.
- C 22 to 30 inches +, olive, white, pale-yellow, and green disintegrated rock.

The surface layer ranges from light olive gray to dark grayish brown in color and from 4 to 12 inches in thickness. A few small areas are gravelly and shallow to bedrock. The subsoil ranges from olive brown to dark yellowish brown in color and from 10 to 20 inches in thickness. Included with this soil are small areas of loam and silt loam and areas of Wilkes and Mecklenburg soils on comparable slopes.

Much of this soil has been cleared and is used for small grains and hay crops. It is a slowly permeable soil and is difficult to till, even within a narrow range of moisture content. If it is carefully managed, however, it can be cultivated. (Capability unit IIe-3)

Iredell fine sandy loam, 2 to 7 percent slopes, eroded (IrB2).—This eroded soil has a surface layer 4 to 7 inches thick, or thinner than that in Iredell fine sandy loam, 2 to 7 percent slopes. In cultivated fields the surface layer is a mixture of the original surface layer and the plastic clay subsoil.

This soil is suited to crops if it is managed to prevent the loss of soil and water. It is also suited to lespedeza and other shallow-rooted legumes, and to grasses and small grains. It is a poor soil for alfalfa and other deep-rooted crops but is a fairly good soil for pasture and trees. (Capability unit IIe-3)

Iredell fine sandy loam, 7 to 10 percent slopes (IrC).—This soil is more sloping than Iredell fine sandy loam, 2 to 7 percent slopes. It can be cultivated safely if excessive loss of soil and water is prevented. It is well suited to small grains and grasses, and to lespedeza and some other legumes. Because the plastic clay subsoil is slowly permeable, this soil is poorly suited to alfalfa and other deep-rooted crops. It is suited to pasture and trees. (Capability unit IIIe-3)

Iredell fine sandy loam, 7 to 10 percent slopes, eroded (IrC2).—This eroded soil is steeper than Iredell fine sandy loam, 2 to 7 percent slopes. The surface layer is 4 to 6 inches thick and, in cultivated fields, is a mixture of the original surface layer and the upper part of the clay subsoil.

Although this soil is susceptible to further erosion, occasionally it can be planted to some cultivated crops. It is poorly suited to clean-tilled or deep-rooted crops but is well suited to small grains and lespedeza. The soil is fairly well suited to grasses and shallow-rooted legumes grown for hay or pasture. Trees make moderate growth. (Capability unit IVe-3)

Iredell fine sandy loam, 10 to 14 percent slopes (IrD).—This soil is more strongly sloping than Iredell fine sandy loam, 2 to 7 percent slopes. It is generally less than 20 inches deep to weathered rock. Rock outcrops and gravelly areas are common.

This soil is highly erodible, but it can be cultivated safely at long intervals. It is fairly well suited to small grains and grasses and to lespedeza and some other legumes. It is poorly suited to clean-tilled and to deep-rooted crops. Trees grow fairly well. (Capability unit IVe-3)

Iredell fine sandy loam, 10 to 14 percent slopes, eroded (IrD2).—This eroded soil has a thinner surface layer than has Iredell fine sandy loam, 2 to 7 percent slopes. In most places the surface layer is less than 5 inches thick and contains plastic clay that has been brought up from the subsoil in tillage. The soil is generally less than 20 inches deep to weathered rock. Shallow and gravelly areas are common.

This soil is not suited to cultivated crops but is fairly well suited to grasses and legumes that are grown locally for pasture. The soil is suited to trees. (Capability unit VIe-3)

Lloyd Series

The Lloyd series consists of deep, well-drained, friable soils on the uplands of the Piedmont. These soils formed in residuum that weathered from mixed rocks, chiefly dark-colored gneiss and diorite. They have a dark brown to dark reddish-brown, loamy surface layer and a dark-red, clayey subsoil. Slopes range from 2 to 40 percent but generally are less than 15 percent.

These soils contain a moderately small amount of organic matter and a moderate amount of available plant nutrients. They are medium acid and have a high available water-holding capacity.

The Lloyd soils occur with the Cecil, Iredell, Madison, and Davidson soils. They are darker colored and somewhat finer textured than the Cecil soils. The Lloyd soils are deeper and darker colored than the Iredell soils, and they have a more friable subsoil. They are darker colored and generally finer textured than are the Madison soils, and they contain less mica than those soils. Lloyd soils

have a sandier surface layer than the Davidson soils and a lighter red subsoil.

Lloyd soils are scattered through the central and eastern parts of the county. About one-third of the acreage has been cleared and is used chiefly for row crops. The rest is in cutover hardwoods of low quality, prominently spotted with stands of shortleaf and Virginia pines. The pines are commonly in severely eroded or steep areas that were once cultivated.

Lloyd loam, 7 to 10 percent slopes (LdC).—This is a deep to moderately deep, well-drained soil on uplands. It has a dark reddish-brown surface layer and a clayey subsoil. The soil formed in residuum that weathered from dark-colored gneiss and schist and from various basic rocks.

Profile under a cutover stand of oak and pine (in the southeastern part of the county 50 feet east of Wyo Road, 1.7 miles southwest of Huntsville Baptist Church):

- A_{00} 2 inches to 1 inch, raw hardwood litter.
- A_0 1 to 0 inch, brown to very dark gray, undecomposed mass of hardwood litter and roots.
- A_1 0 to 6 inches, dark reddish-brown (5YR 3/4) heavy loam; weak, fine, granular structure; very friable; many fine and medium roots; abrupt, smooth boundary.
- A_3 6 to 10 inches, reddish-brown (5YR 4/4) clay loam; weak, medium and fine, subangular blocky structure; friable when moist; clear, smooth boundary.
- B_1 10 to 14 inches, yellowish-brown (5YR 4/8) clay loam; moderate, medium and fine, subangular blocky structure; friable when moist; clear, smooth boundary.
- B_{21} 14 to 19 inches, red to dark-red (2.5YR 4/6 to 3/6) clay; moderate, medium, subangular blocky structure; friable to firm when moist; thin, patchy clay films; clear, smooth boundary.
- B_{22} 19 to 38 inches, dark-red to red (2.5 YR 3/6 to 4/6) clay; strong, coarse and medium, subangular blocky structure; firm when moist; prominent clay films; gradual, smooth boundary.
- B_3 38 to 53 inches, dark-red (2.5YR 4/6) heavy clay loam mottled with strong brown (7.5YR 5/8), pale brown, and light gray; weak, coarse, angular blocky structure; friable when moist; prominent clay films on primary aggregates; gradual, wavy boundary.
- C_1 53 to 90 inches, red loam to silt loam mottled with light gray, pale brown, and black; disintegrated, deeply weathered mafic rock; gradual, wavy boundary.
- C_2 90 to 104 inches, light-gray, pale-brown, red, and black, weathered mafic rock of silt loam texture; contains some fine mica flakes.

The surface layers (A horizon) are 5 to 11 inches thick. The subsoil ranges from yellowish brown to dark red in color and from 26 to 40 inches in thickness. It is generally firm, but in a few areas it is friable. In places the subsoil contains few to many fine mica flakes. Included with this soil are small areas with a fine sandy loam surface layer and small areas of Cecil and Madison soils.

This soil is well suited to cultivated crops, but because of its location, most of the acreage is in trees. Suitable crops are corn and alfalfa and other hay crops. (Capability unit IIIe-2)

Lloyd loam, 2 to 7 percent slopes (LdB).—This soil is more gently sloping than Lloyd loam, 7 to 10 percent slopes, and is only slightly susceptible to erosion. It is well suited to corn, small grains, alfalfa, and lespedeza, and is an excellent soil for pasture or trees. (Capability unit IIe-2)

Lloyd loam, 2 to 7 percent slopes, eroded (LdB2).—This eroded soil has a thinner surface layer than Lloyd loam, 7 to 10 percent slopes. Its surface layer is 4 to 8 inches thick. In cultivated fields, plowing has mixed the original surface layer and the clay loam of the subsoil.

This soil is well suited to corn, small grain, lespedeza, and alfalfa. It is an excellent soil for pasture or trees. If row crops are planted, simple practices are needed to control runoff. (Capability unit IIe-2)

Lloyd loam, 7 to 10 percent slopes, eroded (LdC2).—The surface layer of this eroded soil is thinner than that of Lloyd loam, 7 to 10 percent slopes. It is 4 to 8 inches thick and in cultivated fields is a mixture of the original surface layer and the clay loam brought up from the subsoil by plowing.

This soil is well suited to cultivated crops, but it is subject to further erosion and to water losses if it is not protected. Corn, small grains, lespedeza, and alfalfa are suitable crops. Pasture and trees grow very well. (Capability unit IIIe-2)

Lloyd loam, 10 to 14 percent slopes (LdD).—This soil is more strongly sloping than Lloyd loam, 7 to 10 percent slopes, and is more susceptible to erosion. It ought to be protected by close growing vegetation most of the time, but cultivated crops can be grown. Corn, small grain, lespedeza, and alfalfa are suitable crops, and pasture and trees grow well. (Capability unit IVe-2)

Lloyd loam, 10 to 14 percent slopes, eroded (LdD2).—This eroded soil is on stronger slopes than Lloyd loam, 7 to 10 percent slopes. Its surface layer is less than 7 inches thick and, in cultivated fields, is a mixture of the original surface soil and clay loam from the upper part of the subsoil.

This soil can be cultivated at intervals, but it needs very careful management to control erosion. Corn, small grains, lespedeza, and alfalfa are suitable crops. Pasture and trees are also suitable. (Capability unit IVe-2)

Lloyd loam, 14 to 25 percent slopes (LdE).—This soil is steeper than Lloyd loam, 7 to 10 percent slopes, and is shallower to parent material. In most places the subsoil is less than 30 inches thick, and in many places partly weathered rock is at a depth of less than 24 inches.

The soil is generally not suited to cultivated crops. It is well suited to grasses and legumes that are locally grown, and it is a fairly good soil for pasture and trees. (Capability unit VIe-1)

Lloyd loam, 14 to 25 percent slopes, eroded (LdE2).—This eroded soil is steeper than Lloyd loam, 7 to 10 percent slopes. Its surface layer is generally less than 6 inches thick and contains subsoil material that has been brought up in tillage. The depth to weathered rock is generally less than 40 inches, and in some areas it is only 24 inches.

Included with this soil are small areas of Lloyd clay loam, 14 to 25 percent slopes, severely eroded, where all the original surface layer has washed away.

Lloyd loam, 14 to 25 percent slopes, eroded, is generally not suited to cultivation. It is best suited to pasture or trees. Tilth is not so good as on the uneroded Lloyd loams, and good management is needed to establish and maintain pasture. This soil is well suited to grasses and legumes that are locally grown. (Capability unit VIe-1)

Lloyd loam, 25 to 40 percent slopes (LdF).—This soil is much steeper than Lloyd loam, 7 to 10 percent slopes. In most places the depth to parent material is less than

30 inches. Stones and pebbles are generally on the surface of the soil.

This soil is not suited to cultivated crops or to pasture. Most of the acreage is wooded, and this is the best use. (Capability unit VIIe-1)

Lloyd clay loam, 2 to 10 percent slopes, severely eroded (LcB3).—This soil has lost all of its original surface layer through accelerated erosion. The present surface layer is clay loam and is darker and more compact than the clay loam subsoil of uneroded Lloyd soils. In some areas part of the present surface layer has been removed by erosion.

Profile in a cultivated field (0.1 mile northwest of Forbush Baptist Church, on Davis farm, 50 yards southwest of a metal-framed wire gate in a honeysuckle-covered fence along the southwestern side of U. S. Highway 421 and 40 yards east of another fence running north and south):

A 0 to 10 inches, dark reddish-brown (2.5YR 3/4, moist) to red (2.5YR 5/6, dry) clay loam; weak, medium, subangular blocky structure; friable when moist; fine roots common in upper 4 inches, and few in rest of horizon; abrupt boundary.

B_2 10 to 36 inches, dark-red (2.5YR 3/6) clay; moderate, medium, subangular blocky structure; friable when moist; sticky and spongy when wet; few dark, deeply weathered fragments of gneiss and basic rock splotched with yellow; structural aggregates have horizontal trend near bottom of layer; gradual boundary.

C 36 to 45 inches +, dark reddish-brown (2.5YR 3/4) clay loam; structureless; friable when moist; many small, more or less rounded fragments of black basic rock; few angular quartz pebbles, few coarse sand grains, and few fine mica flakes; occasional partly weathered, dark, gritty fragments of gneiss.

On the surface of this soil, in the spot where the profile was observed, there were many small weathered fragments of basic rock, an occasional dark fragment of heavy micaceous rock that is purplish on a new fracture, a few angular quartz pebbles, and a few fine mica flakes.

The plow layer ranges from dark red to dark reddish brown in color. To a depth of 4 to 6 inches, it is a mixture of the original surface layer and subsoil material. The subsoil ranges from 20 to 30 inches in thickness.

Most of this soil is in stands of pines of poor quality or is idle. Seedbed preparation is difficult because workability is poor, the available water-holding capacity is low, and the soil can be worked in only a narrow range of moisture content. Under intense management, however, some areas of this soil can be made fairly well suited to cultivated crops. (Capability unit IIIe-5)

Lloyd clay loam, 10 to 14 percent slopes, severely eroded (LcD3).—This soil is on stronger slopes than Lloyd clay loam, 2 to 10 percent slopes, severely eroded. Many shallow gullies and a few deep gullies have formed.

This is only a fair soil for cultivation. Because tilth is poor and the hazard of further erosion is severe, it is difficult to prepare a seedbed and to obtain a good stand of crops. Under good management, however, this soil is suited to small grains and grasses and to lespedeza and other legumes. It is well suited to pasture and is fairly well suited to trees. (Capability unit IVe-5)

Lloyd clay loam, 14 to 25 percent slopes, severely eroded (LcE3).—This soil is steeper and shallower than Lloyd clay loam, 2 to 10 percent slopes, severely eroded. In most places it is less than 26 inches deep. Many shallow gullies and a few deep gullies have formed.

This soil is not suited to cultivated crops, but it is fairly well suited to pasture. Because of severe erosion, tilth is poor. Stands of grasses and legumes are hard to obtain, but once established the plants make satisfactory growth. Grazing ought to be controlled and livestock and farm equipment kept off the soil when it is wet. Trees can be grown, but they grow slowly. (Capability unit VIe-2)

Local Alluvial Land

Alluvial materials that have been washed relatively short distances from uplands are mapped in Yadkin County as Local alluvial land.

Local alluvial land (Lo).—This land type consists of local alluvial material that washed from sandy soils on the adjacent uplands of the Piedmont Plateau. It is nearly level to gently sloping and occurs in depressions, at the base of slopes, and at the head of small streams. In most places it is well drained to moderately well drained, but small local spots are springy. The permeability is moderate.

The soil material of this land is moderately deep. It ranges from 26 to more than 48 inches in depth but is generally more than 36 inches. The surface layer is thick and is gray to grayish-brown sandy loam. Some degree of soil development is evident, but it varies from one place to another because of differences in time the alluvial material has been in place and differences in the soils from which the material washed. Generally, a weakly defined subsoil has formed that ranges from strong brown to light yellow in color, depending on the color of the parent soils.

In some places Local alluvial land occurs with Cecil and other soils that are darker colored and finer textured than the soil material in this land and that have a well-developed profile. In those places, the surface layer is fine sandy loam and the subsoil is moderately well defined. In other places this land occurs with Louisburg and other soils that are lighter colored and coarser textured and lack a distinct profile. In those places the soil material is deep. The surface layer is coarse sandy loam, and a well-defined subsoil is lacking.

This land is well suited to all crops grown locally. Its favorable tilth and moisture relations make it excellent for truck crops. Although it is low in natural fertility and the supply of organic matter is difficult to maintain, the land responds well to amendments, especially to barnyard manure and lime. It can be cultivated within a wide range of moisture content and is easy to manage. (Capability unit IIw-2)

Louisburg Series

The Louisburg series consists of shallow, well drained, very friable soils on foothills and mountain slopes. These soils formed in residuum that weathered from acid, crystalline, coarse-textured granite and gneiss. They have a brownish, sandy surface layer, but a distinct B horizon has not developed. Slopes range from 7 to 50 percent.

These soils are low in organic matter and in their supply of available plant nutrients. They are medium acid and have a low available water-holding capacity.

The Louisburg soils occur with the Halewood and Hayesville soils. Louisburg soils are shallower, lighter colored, and generally coarser textured than those soils, which have a well defined B horizon. In addition, they are more gravelly than the Halewood and Hayesville soils and contain more outcrops of rock.

Louisburg soils are mostly near the Brushy Mountains in an area south of Jonesville. About two-thirds of the acreage is in hardwoods of low quality, and the rest is cleared and chiefly used for row crops.

Louisburg coarse sandy loam, 14 to 25 percent slopes (LsE).—This is a shallow to moderately deep, well-drained, friable soil in the intermountain region and on the uplands of the Piedmont. It formed in residuum that weathered from coarse-textured granite, gneiss, and schist but lacks a well defined B horizon.

Profile under a mature stand of shortleaf pine and a prominent understory of hardwoods in the Brushy Mountains (on the Shore farm, at an elevation of 1,400 feet):

- A_0 1 to 0 inch, dark-brown, undecayed pine needles and hardwood litter.
- A_1 0 to 5 inches, dark grayish-brown (2.5Y 4/2) coarse sandy loam; weak, coarse, granular structure; very friable; abrupt, wavy boundary.
- A_3 5 to 20 inches, light yellowish-brown (2.5Y 6/4) coarse sandy loam; weak, coarse, granular structure to structureless; very friable; few small fragments of quartz and feldspar; relic rock in lower part; gradual boundary.
- C 20 to 29 inches, light yellowish-brown (2.5Y 6/4) weathered granite gneiss; many hard fragments of granite and quartz; hard rock at depth of 29 inches.

The surface layer ranges from light olive brown to dark grayish brown in color, and from 8 to 20 inches in thickness. Large boulders of granite are scattered on the surface in some places. Rock outcrops are common. The underlying material varies in degree of weathering and in thickness, but generally it is 10 to 20 inches thick. Included with this soil are small areas of sandy loam and fine sandy loam, and small areas of Halewood and Appling soils.

Most of this soil is in pines and hardwoods of low quality. The soil is not suited to cultivated crops, but it is suited to pasture and trees. Because of the low available water-holding capacity, however, yields of pasture and of wood products are likely to be low. (Capability unit VIe-3)

Louisburg coarse sandy loam, 7 to 14 percent slopes (LsD).—This soil does not have so variable characteristics as Louisburg coarse sandy loam, 14 to 25 percent slopes.

Because it is droughty and highly erodible, this soil should be kept in close-growing vegetation most of the time. It is poorly suited to corn but is fairly well suited to lespedeza and to an occasional crop of brightleaf tobacco or small grain. If it is necessary to grow row crops, planting and tillage ought to be on the contour. Suitable uses are pasture and trees, but yields are likely to be low. (Capability unit IVe-4)

Louisburg coarse sandy loam, 25 to 50 percent slopes (LsF).—This soil is steeper than Louisburg coarse sandy loam, 14 to 25 percent slopes, but it is similar to that soil in other characteristics. It is not suited to cultivated crops and should be kept in trees. Yields of wood products, however, are likely to be very low. (Capability unit VIIe-2)

Madison Series

The Madison series consists of moderately deep to deep, well-drained, friable soils on the uplands of the Piedmont. These soils formed in residuum that weathered from quartz mica schist. They have a brown, loamy surface layer and a red, clayey subsoil. Slopes range from 2 to 40 percent but generally are more than 10 percent.

These soils contain a moderately small amount of organic matter and available plant nutrients. They are strongly acid and have a medium capacity for holding available water.

The Madison soils occur with the Cecil, Appling, and Lloyd soils and contain more mica than those soils. They are shallower to weathered rock than Cecil soils and are darker colored and somewhat shallower than the Appling soils. Madison soils are somewhat coarser textured and somewhat lighter colored than Lloyd soils.

In Yadkin County the Madison soils are chiefly in the western part between Cycle and Rena and in the east-central part between Mount Pleasant and Enon. About half of the acreage is suitable for cultivation and is used chiefly for row crops. The remaining half occupies steep slopes along drainageways and is in cutover hardwoods of low quality.

Madison fine sandy loam, 2 to 7 percent slopes (MaB).—This is a deep, well-drained, micaceous soil that has a red clay subsoil. It formed on uplands in residuum that weathered from quartz mica schist.

Profile under a cutover stand of oak and hickory (in the north-central part of the county, 100 yards northwest of a white frame house on the A. E. Flemming farm, 0.4 mile west of Mount Pleasant Methodist Church, 0.3 mile south of State Highway 67, and 0.5 mile northeast of Nebo):

- A_{00} 2 inches to 1 inch, raw hardwood litter.
- A_0 1 to 0 inch, partially decomposed litter and a profusion of fine roots.
- A_1 0 to 1 inch, very dark grayish-brown to dark-brown (10YR 3/3) fine sandy loam; weak, fine, granular structure; very friable; few fine mica flakes and few small platy fragments of quartz mica schist; abrupt, smooth boundary.
- A_2 1 to 6 inches, yellowish-red (5YR 5/6 to 5/8) fine sandy loam; moderate, fine to medium, subangular blocky structure; very friable to friable; few fine mica flakes; few small platy fragments of quartz mica schist; occasional flat, angular, quartz mica schist stones; abrupt, smooth boundary.
- B_{21} 6 to 12 inches, yellowish-red (5YR 4/8) clay loam; moderate, medium and coarse, subangular blocky structure; friable; fine mica flakes and fragments of quartz mica schist; clear, wavy boundary.
- B_{22} 12 to 20 inches, red (2.5YR 4/8) clay; moderate, medium, subangular blocky structure; friable to firm; mica flakes and fragments of quartz mica schist common; faint, patchy clay films; gradual, wavy boundary.
- B_3 20 to 26 inches, red (2.5YR 4/6) clay loam; weak, medium to coarse, angular blocky structure; friable; mica flakes and fragments of quartz mica schist common; gradual, irregular boundary.
- C_1 26 to 30 inches, red, highly weathered, quartz mica schist material; contains pockets or thin bands of soil material horizontally arranged between layers of weathered schist; gradual, irregular boundary.

C_2 30 to 38 inches, variegated dusky red and yellow, weathered quartz mica schist; hard rock at 38 inches.

The surface layer ranges from very dark grayish brown to dark brown in color and from 5 to 9 inches in thickness. In some places the surface layer contains mica flakes and mica schist fragments but the amount varies. A few large stones and outcrops of bedrock are in some places. The subsoil ranges from red to yellowish red in color and from clay to clay loam in texture. In many places it contains enough mica flakes to give the soil a slick greasy feel when rubbed between the fingers. The subsoil is firm to friable and is 15 to 30 inches thick. Included with this soil are small areas that have a loam surface layer, and areas of Cecil and Lloyd soils.

This soil is well suited to cultivated crops. Most of the acreage, however, occurs in small or poorly accessible areas and is wooded. Where the soil is cultivated, it is generally planted to tobacco, corn, and small grains. (Capability unit IIe 1)

Madison fine sandy loam, 2 to 7 percent slopes, eroded (MaB2).—This eroded soil has a thinner surface layer than Madison fine sandy loam, 2 to 7 percent slopes, The surface layer is 4 to 6 inches thick, and in cultivated fields it contains material brought from the upper subsoil in tillage. The soil is well suited to all crops commonly grown in the county. The hazard of further erosion is slight. (Capability unit IIe-1)

Madison fine sandy loam, 7 to 10 percent slopes (MaC). This sloping soil, in a few spots, is shallower than Madison fine sandy loam, 2 to 7 percent slopes. In local areas partly weathered mica schist is at or near the surface.

Though the hazard of erosion is severe, this soil is well suited to crops generally grown in the county. It needs to be protected from damaging losses of soil and water. Terracing is difficult in some fields because of areas that are shallow to bedrock. (Capability unit IIIe-1)

Madison fine sandy loam, 7 to 10 percent slopes, eroded (MaC2). In this eroded soil, shallow spots are more numerous than in the Madison fine sandy loam, 2 to 7 percent slopes. The surface layer is 3 to 5 inches thick, and in cultivated fields it is a mixture of original surface soil and the upper part of the reddish subsoil. Weathered mica schist is at or near the surface in local areas.

This soil is well suited to crops generally grown in the county, but it needs to be protected from damaging losses of soil and water. Terracing is difficult in the shallow or rocky areas. (Capability unit IIIe-1)

Madison fine sandy loam, 10 to 14 percent slopes (MaD).—This strongly sloping soil has a thinner surface layer and subsoil than Madison fine sandy loam, 2 to 7 percent slopes. Shallow areas and outcrops of bedrock are more numerous. The depth to the substratum is generally 20 to 22 inches.

This soil can be used occasionally for cultivated crops. It is suited to small grains and grasses and to lespedeza and other legumes. Suitable cropping and tillage practices are needed to control erosion. Terracing is difficult. The soil is well suited to pasture and trees. (Capability unit IVe-1)

Madison fine sandy loam, 10 to 14 percent slopes, eroded (MaD2).—This eroded soil is shallower than Madison fine sandy loam, 2 to 7 percent slopes, and it has more outcrops of bedrock. The surface layer is a mixture of fine sandy loam and clay loam from the upper part of the subsoil. The depth to the substratum varies widely from one place to another.

This soil is suited to small grains and grasses and to lespedeza and other legumes. The risk of further erosion is great, and the soil ought to be protected by close-growing crops most of the time. Shallowness prevents the use of terraces. This soil is well suited to pasture and trees. (Capability unit IVe-1)

Madison fine sandy loam, 14 to 25 percent slopes (MaE).—This steep soil is shallow and stony in more places than Madison fine sandy loam, 2 to 7 percent slopes. Outcrops of bedrock are numerous. This soil is not suited to cultivated crops but is suited to grasses and legumes that are locally grown. It is a fairly good soil for pasture and trees. (Capability unit VIe-1)

Madison gravelly fine sandy loam, 7 to 10 percent slopes (MdC). -This sloping soil is similar to Madison fine sandy loam, 2 to 7 percent slopes, but it has a large amount of gravel on the surface and in the surface layer. The subsoil contains more fragments of mica schist than the fine sandy loam. These fragments are as much as 3 inches in diameter.

This soil is well suited to all crops generally grown in the county. It needs careful management, but some areas are difficult to terrace. The gravel in the surface layer does not interfere with tillage. (Capability unit IIIe-1)

Madison gravelly fine sandy loam, 10 to 14 percent slopes (MdD).—This strongly sloping soil is shallower than Madison fine sandy loam, 2 to 7 percent slopes, or generally less than 24 inches deep to the substratum. Gravel is on the surface and makes up 20 to 50 percent of the surface layer. The subsoil contains many fragments of mica schist, and outcrops of this rock are common.

This soil can be used occasionally for cultivated crops. It is suited to small grains and grasses, and to lespedeza and other legumes. It is well suited to pasture and trees. The gravel in the surface layer does not seriously interfere with tillage. (Capability unit IVe-1)

Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded (MdD2).—This eroded soil is shallower than Madison fine sandy loam, 2 to 7 percent slopes. Gravel is on the surface and makes up 20 to 50 percent of the surface layer. In most cultivated fields the surface layer has been mixed with subsoil material to plow depth. Severely eroded spots of gravelly clay loam are included. In many places where the soil is shallow, mica schist is on or near the surface.

This soil is best suited to pasture and trees. It is also suited to small grains, grasses, and lespedeza and other legumes. The gravel in the surface layer does not seriously interfere with tillage, but the soil is susceptible to further losses from erosion if it is not protected by vegetative cover. (Capability unit IVe-1)

Madison gravelly fine sandy loam, 14 to 25 percent slopes (MdE).—This soil is shallower than Madison fine sandy loam, 2 to 7 percent slopes, and it is very gravelly through the profile. The depth to the substratum is generally less than 22 inches and in many places is less than 18 inches. Stones and outcrops of rock are common.

This soil is not suited to cultivated crops. It is suited to trees, and to grasses and legumes commonly grown for pasture. (Capability unit VIe-1)

Madison gravelly fine sandy loam, 25 to 40 percent slopes (MdF).—This gravelly soil is shallower than Madison fine sandy loam, 2 to 7 percent slopes, and it contains many stones and outcrops of rock. It is not suited to cultivated crops or pasture. It is suited to trees, but they grow slowly. (Capability unit VIIe-1)

Mayodan Series

The Mayodan series consists of deep, well drained, friable soils on the uplands of the Piedmont. These soils formed in residuum that weathered from Triassic sandstone and shale. They have a yellowish-brown loamy surface layer and a yellowish red clayey subsoil. Slopes range from 2 to 40 percent but are generally less than 15 percent.

These soils have a low content of organic matter and are low in available plant nutrients. They are strongly acid and have a medium capacity to hold available water.

The Mayodan soils occur with the Wadesboro soils and are lighter colored than those soils.

In this county, Mayodan soils are in the southeastern part in a small area southwest of Shacktown. About half of the acreage is cleared and is used chiefly for row crops. The remaining half is in cutover hardwoods of low quality that are prominently spotted with pure stands of shortleaf pine. The pines are common on severely eroded or steep areas that were once cultivated.

Mayodan fine sandy loam, 2 to 7 percent slopes (MfB).—This is a deep, well-drained soil that has a yellowish-red clay subsoil. It formed on uplands in residuum that weathered from Triassic sandstone and shale.

Profile under an oak and hickory forest in the southeastern part of the county (20 yards from the northeast corner of Crossroads Baptist Church at Courtney):

A_{00} 1 to 0 inch, raw hardwood litter.
A_1 0 to 3 inches, dark-gray (10YR 4/1) fine sandy loam; weak, fine, granular structure; friable when moist; many fine roots; angular quartz pebbles common on top of horizon; abrupt, smooth boundary.
A_2 3 to 8 inches, yellowish brown (10YR 5/4) fine sandy loam; weak, medium, subangular blocky structure; friable when moist; fine and medium roots are common; clear, wavy boundary.
B_1 8 to 11 inches, strong-brown (7.5YR 5/6) clay loam to light clay loam; moderate, medium, subangular blocky structure; firm when moist, hard when dry; thin, patchy clay films; clear, wavy boundary.
B_2 11 to 24 inches, yellowish-red (5YR 5/6) clay; strong, medium, subangular blocky structure; firm when moist, hard when dry; prominent, continuous clay films; gradual, smooth boundary.
B_3 24 to 32 inches, yellowish-red (5YR 5/6) clay with variegations of white or light gray; weak, medium, angular blocky structure; firm when moist, hard when dry; gradual, smooth boundary.
C_1 32 to 40 inches, highly weathered, Triassic sandstone and shale of loam texture; yellowish red with prominent variegations of white, pale brown, and pink.
C_2 40 to 76 inches, pink, white, and pale-brown, weathered, Triassic sandstone and shale.

The surface layer ranges from dark grey to grayish brown in color, and from 6 to 10 inches in thickness. The subsoil ranges from yellowish red to strong brown in color, and from clay to clay loam in texture. The subsoil is firm to friable and is 22 to 40 inches thick. In some places remains of weathered rock are in the lower part of the B_3 horizon. Included with this soil are small areas with a silt loam surface layer and areas of Wadesboro soils.

This soil is well suited to cultivated crops. It is poorly accessible, however, and most of the acreage is wooded. The cultivated areas are used for row crops, especially brightleaf tobacco. (Capability unit IIe 1)

Mayodan fine sandy loam, 2 to 7 percent slopes, eroded (MfB2).—This eroded soil has a thinner surface layer than Mayodan fine sandy loam, 2 to 7 percent slopes. The surface layer is 3 to 6 inches thick, and in many places, material from the clay loam subsoil has been mixed with it in tillage. This soil is well suited to all crops that are generally grown in the county. It is subject to erosion if used for row crops and if not protected by conservation cropping systems or structural practices. (Capability unit IIe-1)

Mayodan fine sandy loam, 7 to 10 percent slopes (MfC).—This soil is more strongly sloping than Mayodan fine sandy loam, 2 to 7 percent slopes. It is well suited to all crops grown locally, but it is susceptible to erosion if it is not protected by vegetative cover and structural practices. It is well suited to pasture and trees. (Capability unit IIIe-1)

Mayodan fine sandy loam, 7 to 10 percent slopes eroded (MfC2).—This strongly sloping, eroded soil has a thinner surface layer than Mayodan fine sandy loam, 2 to 7 percent slopes. In some areas 3 to 6 inches of the original surface layer of fine sandy loam remains. In other areas remnants of the original surface layer and the upper part of the clay loam subsoil have been mixed in tillage.

This soil is suited to cultivated crops but is susceptible to severe erosion. Under good management, it is suited to all crops locally grown. It is well suited to pasture and trees. (Capability unit IIIe-1)

Mayodan fine sandy loam, 10 to 14 percent slopes (MfD).—This soil is more strongly sloping than Mayodan fine sandy loam, 2 to 7 percent slopes, but is similar to that soil in other characteristics. It can be used occasionally for cultivated crops but must be carefully managed to prevent severe erosion. It is suited to all crops that are locally grown and is well suited to pasture and trees. (Capability unit IVe-1)

Mayodan fine sandy loam, 10 to 14 percent slopes, eroded (MfD2).—This strongly sloping, eroded soil has a thinner surface layer than Mayodan fine sandy loam, 2 to 7 percent slopes. In areas that have not been cultivated, the original surface layer of fine sandy loam is 3 to 5 inches thick. In areas that have been cultivated, remnants of the original surface layer of fine sandy loam have been mixed with clay loam from the subsoil. Some included areas have a plow layer that consists mostly of clay loam.

This soil can be planted to cultivated crops at long intervals, but close growing crops should be used most of the time. If managed carefully to control further erosion, the soil is well suited to all crops generally grown in the county. It is a good soil for pasture and trees. (Capability unit IVe-1)

Mayodan fine sandy loam, 14 to 40 percent slopes (MfF).—This steep soil is shallower in most places than Mayodan fine sandy loam, 2 to 7 percent slopes. It ex-

tends to a depth of less than 30 inches and, in some places, to less than 24 inches.

This soil is generally not suited to cultivated crops, but it is well suited to grasses and legumes that are locally grown for pasture. It is a good soil for trees, particularly pine trees. (Capability unit VIe-1)

Mecklenburg Series

The Mecklenburg series consists of deep to moderately deep, well drained soils on the uplands of the Piedmont. These soils formed in residuum that weathered from dark colored basic rocks. They have a brownish loam surface layer and a yellowish red, firm clay subsoil. Slopes range from 2 to 25 percent but generally are less than 15 percent.

These soils have a moderately low content of organic matter and a moderately high supply of available plant nutrients. They are medium acid and have a high capacity for holding available water.

Mecklenburg soils occur with Iredell soils. They are deeper and brighter colored than Iredell soils and have a coarser textured subsoil.

In Yadkin County the Mecklenburg soils are mostly in two small areas in the southern part. The larger area is 2 miles east of Courtney, the smaller is 1 mile north of Lone Hickory. About half of the acreage is cleared and used chiefly for row crops. The rest is in low-quality hardwoods.

Mecklenburg loam, 2 to 7 percent slopes, eroded (MkB2). This is a moderately deep, well-drained soil on uplands. It formed in residuum that weathered from dark-colored crystalline rock and has a yellowish-red, heavy plastic clay subsoil that is slowly permeable.

Profile in a cultivated field (in southeastern part of the county, 50 yards east of tall hickory tree in hedgerow along farm road, 0.3 mile north of Wyo road, 2.8 miles east of Courtney):

A_p 0 to 7 inches, dark yellowish-brown (10YR 4/4) loam; strong, medium and coarse, granular structure; friable when moist; surface more or less covered with small angular quartz pebbles and small rounded black concretions; undecomposed layer of grass, wheat stubble, and weeds at a depth of 3 inches; abrupt, smooth boundary.

B_{21} 7 to 17 inches, yellowish-red (5YR 4/6) clay; strong, medium, subangular blocky structure; firm when moist; prominent, continuous clay films; few small quartz pebbles and dark, rounded concretions; clear boundary.

B_{22} 17 to 26 inches, yellowish-red (5YR 4/8) heavy clay mottled with yellowish brown (10YR 5/8) and red (2.5YR 4/8); strong, fine and medium, angular blocky structure; firm when moist, plastic when wet; few rounded concretions that give a yellowish-brown streak when cut across or broken; prominent, continuous clay films; clear, wavy boundary.

B_3 26 to 38 inches, dark yellowish-brown (10YR 4/4) clay loam, strongly mottled with red (2.5YR 4/8), brownish yellow (10YR 6/6), and black; strong, medium, subangular blocky structure; friable; black flecks and streaks very distinct at a depth of 30 inches; few fragments of basic rock and some relic rock; gradual boundary.

C 38 to 44 inches +, strong-brown, yellowish-red, black, and pale-brown, deeply weathered rock material of loam texture; friable.

The surface layer ranges from dark brown to yellowish brown in color and is 5 to 8 inches thick. In some places the surface layer contains subsoil material brought up in plowing. The amount of material varies from one area to another, but generally it is not enough to change the texture of the surface layer to clay loam. The subsoil ranges from yellowish red to yellowish brown in color, from heavy clay to heavy clay loam in texture, and from 24 to 36 inches in thickness. Included with this soil are small areas with a fine sandy loam surface layer and small areas of Iredell soils.

Most of this soil has been cleared and is used for row crops, chiefly corn, and for small grain and hay. The soil is suited to these crops but is hard to manage. The range of moisture content suitable for seedbed preparation and tillage is narrow. (Capability unit IIe-3)

Mecklenburg loam, 7 to 14 percent slopes, eroded (MkC2).—This strongly sloping soil is shallower in some areas than Mecklenburg loam, 2 to 7 percent slopes, eroded. It is suited to cultivation, but the erosion hazard is severe. Tilth is poor, infiltration is slow, and surface runoff is rapid. If cultivated, this soil needs to be managed to control losses of soil and water. The soil is fairly well suited to most crops that are locally grown, but it is poorly suited to brightleaf tobacco. It is a good soil for grasses and legumes and for pines. (Capability unit IIIe-3)

Mecklenburg loam, 14 to 25 percent slopes, eroded (MkE2).—This steep soil has a thinner surface layer and subsoil than Mecklenburg loam, 2 to 7 percent slopes, eroded. The surface layer is less than 6 inches thick and the subsoil less than 26 inches. Locally, stones and gravel are common.

This soil is in poor tilth and is not suited to cultivation. It is well suited to pasture and trees, but pasture ought not to be grazed when it is wet. (Capability unit VIe-1)

Mixed Alluvial Land

In Yadkin County, Mixed alluvial land is mapped in two units according to drainage. These units are Mixed alluvial land, poorly drained, and Mixed alluvial land, well drained.

Mixed alluvial land, poorly drained (Mm).—This land type is mainly along the small streams that overflow frequently and deposit layers and pockets of soil material that varies widely in texture. The material is mostly black to gray and is 18 to 36 inches deep over gravel.

This land type is similar to the Wehadkee loams but is coarser textured, and its layers of alluvial material are less uniform in thickness and other characteristics.

Mixed alluvial land, poorly drained, is only fairly productive. It is not important to agriculture in the county. Except in places that have a high water table, it can generally be drained by tile or open ditches. Drained areas can be used for hay crops and corn if they are protected from floods by straightening adjacent stream channels or in other ways. Other areas ought to be kept in pasture or trees. (Capability unit IVw-1)

Mixed alluvial land, well drained (Mn).—This land is on flood plains and is excessively drained to moderately well drained. It is generally along bends of streams where overflow water has deposited material that washed from soils at higher elevations. The texture of this material varies because the particles carried by the water

differ in size and were deposited at times when there were different volumes of flow. Layers and pockets of sand, sandy loam, and silt are interbanded, and there is no profile development.

This land type is similar to Congaree fine sandy loam but has a mixed texture and is more likely to be flooded.

Much of this land is poorly accessible and is in rough pasture or in hardwoods of low quality. The land is suited to most local crops, although the suitability varies with the frequency of overflow. The natural fertility is moderate. This land responds well to lime and fertilizer and is easily tilled. Areas of sandy texture are somewhat droughty, and they need tillage and cropping practices that will add organic matter. (Capability unit IIw 1)

Moderately Gullied Land

Moderately gullied land is mapped in two units in Yadkin County -Moderately gullied land, rolling, and Moderately gullied land, hilly.

Moderately gullied land, rolling (Mr). This land has lost nearly all of the original surface layer through sheet erosion. In many places the soil material now exposed is clay. Shallow gullies are common, and a few deep gullies have formed.

This land generally occurs in small, scattered spots on broken slopes within areas of eroded soils that are not so severely eroded as this land. Most of this land is in low-yielding pasture or is idle. If it is smoothed off, and managed carefully to increase organic matter and restore fertility, it can be used for pasture, hay, and some cultivated crops. It is difficult to work, however, and can be tilled only within a narrow range of moisture content. A good seedbed is difficult to prepare, and crops are hard to establish. (Capability unit IVe-5)

Moderately gullied land, hilly (Ms).—This land is similar to Moderately gullied land, rolling, but is steeper and more erosive. It is also shallower and is more difficult to work. Most of the acreage is now idle or in shortleaf and Virginia pines. It is best used as woodland. (Capability unit VIIe-2)

Severely Gullied Land

Severely gullied areas are mapped in Yadkin County as Severely gullied land.

Severely gullied land (Sg). This land is strongly sloping to very steep and occurs in small, scattered areas south of Huntsville and near the Yadkin River. It is so severely eroded that it cannot be used for crops or pasture, and the gullies are too deep and numerous to be smoothed over with heavy equipment. All of the acreage is now idle or is low-producing woodland. This land is suited to pines, but these trees will grow very slowly. (Capability unit VIIe 2)

Starr Series

The Starr series consists of deep, well-drained soils that lie in depressions, at the base of slopes, and at the head of small drainageways. These soils formed in local alluvium and colluvium that washed or rolled from dark-colored, fine-textured soils on uplands. They have a thick, dark-brown to dark reddish brown loam surface layer and a dark red, weakly defined subsoil. They are nearly level to gently sloping.

Starr soils occur with the Lloyd and the Cecil soils and, in most places, are deeper over parent material than those soils. But Starr soils do not have nearly so much profile development as the Lloyd and Cecil soils, and they do not contain fragments of rock. They have a thicker, darker, finer textured surface layer than the Lloyd soils and a darker, finer textured surface layer than the Cecil soils. The subsoil in Starr soils is not compact like that in the Cecil soils.

Only one soil of the Starr series was mapped in Yadkin County.

Starr loam, 0 to 7 percent slopes (SmB).—This is a deep, well drained soil with a thick surface layer and a weakly defined, dark-red clay loam subsoil. It is in small, scattered areas in depressions, where it formed on colluvium that washed and rolled from Lloyd and Cecil soils.

Profile in a cleared field (in the southeastern part of the county, 0.8 mile south of the Huntsville Road, on farm road near Carl Hollar's store):

A 0 to 28 inches, dark reddish-brown (5YR 3/3) heavy loam to clay loam; weak, medium, granular structure; very friable when moist; many fine roots in upper 12 inches; fine roots common in lower part; contains few small pieces of dark material resembling charcoal; gradual boundary.

C 28 to 42 inches +, dusky-red (10R 3/3) clay loam; weak, coarse, granular structure to massive (structureless); friable when moist; few, small, brownish-yellow particles of basic rock; few medium and fine roots.

The surface layer ranges from reddish brown to dark reddish brown in color and from 12 to 36 inches in thickness. A well defined profile is generally lacking. Included with this soil are small areas of Starr soils with a clay loam surface layer and small, uneroded areas of Lloyd and Cecil soils.

Most of this soil is cleared and used for all row crops commonly grown in the county except brightleaf tobacco. It is an excellent soil for vegetable gardens. (Capability unit IIe-2)

State Series

The State series consists of deep, well-drained, friable soils that have a brownish surface layer and a yellowish-brown, weakly developed subsoil. These soils have developed along the major streams in alluvium in places where the drainage is good. Slopes range from 0 to 2 percent.

These soils are moderate in content of organic matter and moderately low in available plant nutrients. They have a high available water holding capacity and are medium acid.

The State soils occur with the Congaree and Altavista soils. Their sub-soil is better defined than that in the Congaree soils but is not so well defined as that in the Altavista soils. The State soils are generally in lower positions on the alluvial plains than the Altavista soils and, unlike those soils, are not mottled.

Only one soil in the State series is mapped in Yadkin County.

State fine sandy loam (Sn). This is a deep, well drained soil with a yellowish-brown, friable, clay loam

subsoil. It formed in alluvium on low terraces on the principal streams. In this county it is in small, scattered areas, mainly along the Yadkin River.

Profile in a cultivated field in the eastern part of the county (300 feet east of graveled county road, 500 feet southeast of large old farmhouse, 25 feet north of field road, 0.2 mile south of road that crosses new U. S. Highway 421 at west end of new bridge and also crosses Deep Creek near its mouth):

A_p 0 to 10 inches, brown to dark-brown (10YR 4/3) fine sandy loam; weak, fine and medium, granular structure becoming massive (structureless) in the lower 4 inches; very friable; many fine roots in the upper 6 inches; abrupt, wavy boundary.

B_2 10 to 28 inches, yellowish-brown (10YR 5/4) and dark yellowish-brown (10YR 4/4), light sandy clay loam to heavy sandy loam; weak, coarse, subangular blocky structure becoming massive (structureless) in lower 6 inches; friable; few fine roots in upper 4 inches; few, discontinuous, thin sand lenses; clear, wavy boundary.

C 28 to 40 inches +, yellowish-brown (10YR 5/6) fine sandy loam; massive (structureless); very friable; alluvial material.

The surface layer ranges from brown to dark grayish brown in color and from 8 to 12 inches in thickness. The subsoil ranges from dark yellowish brown to yellowish red in color, from sandy clay loam to heavy silt loam in texture, and from 18 to 48 inches in thickness. Included with this soil are small areas with a silt loam surface layer, and areas of Congaree soils that are too small to map separately.

Practically all of this soil has been cleared and is cultivated. It is the best soil in the county for commonly grown crops but is planted mostly to corn, brightleaf tobacco, and truck crops. It is easy to work and conserve. (Capability unit I-1)

Wadesboro Series

The Wadesboro series consists of deep, well-drained, friable soils on the uplands of the Piedmont. These soils formed in residuum that weathered from Triassic sandstone and shale. They have a reddish brown, loamy surface layer and a firm, red, clayey subsoil. Slopes range from 2 to 30 percent but are generally less than 15 percent.

These soils have moderately small amounts of organic matter and available plant nutrients. They are strongly acid and have a high capacity for holding available water.

Wadesboro soils occur with the Mayodan soils and are darker through the profile than those soils.

In this county Wadesboro soils are in a small, well-defined area in the southeastern part. About half of the acreage has been cleared and is used chiefly for row crops. The rest is in cutover hardwoods of low quality, prominently spotted with pure stands of shortleaf pine. The pines are commonly on severely eroded or steep areas that were once cultivated.

Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded (WaB2).—This is a deep, well-drained soil that has a reddish, firm clay subsoil and occurs on upland slopes. It formed in residuum that weathered from Triassic sandstone and shale.

Profile under a cutover stand of 20-year-old pines in the southeastern part of the county (on west bank of graveled county road, 85 yards north of metal tobacco packhouse, 0.5 mile south of Huntsville road, 0.8 mile southwest of Courtney High School).

A_p 0 to 7 inches, reddish-brown (5YR 4/4) fine sandy loam; weak, medium, granular structure; very friable; common fine roots; clear, smooth boundary.

B_2 7 to 38 inches, dark-red (2.5YR 4/6) clay moderate, medium, subangular blocky structure; friable to firm; common, distinct clay films; few roots; clear, wavy boundary.

B_3 38 to 48 inches, reddish-brown (5YR 4/4) heavy clay loam, faintly mottled with dark red, strong brown, and yellow; massive (structureless); firm; small amount of fine sand; gradual boundary.

C 48 inches +, variegated, deeply weathered, Triassic sandstone with overall dusky red-brown color; few spots of very plastic clay but most of horizon is massive and very sandy.

The surface soil ranges from reddish brown to yellowish brown in color and from 6 to 10 inches in thickness. The subsoil ranges from dark red to red in color; it is firm to friable and 36 to 60 inches thick. Included with this soil are small areas of Mayodan and Cecil soils. Also included are areas of Wadesboro soils with a silt loam surface layer.

This soil is well suited to cultivated crops. Most of the acreage is cleared and used for general crops. (Capability unit IIe-1)

Wadesboro fine sandy loam, 2 to 7 percent slopes (WaB).—In many places the surface layer of this soil has not been mixed with the top part of the subsoil in tillage. Consequently, it is coarser textured and less red in color than Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded.

This soil is well suited to all crops commonly grown in the county. Most of the acreage is in small, scattered tracts, however, and is wooded. (Capability unit IIe-1)

Wadesboro fine sandy loam, 7 to 10 percent slopes (WaC).—In most areas this soil has not been plowed. The surface layer contains no subsoil material, and it is coarser textured and less red than that of Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded.

This soil is well suited to all local crops. It is generally in small, scattered tracts, however, and most of the acreage is in hardwoods. (Capability unit IIIe-1)

Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded (WaC2). -This strongly sloping, eroded soil has had its original surface layer mixed with the upper part of the subsoil in tillage, and a reddish plow layer has been formed. Small areas have lost nearly all of their original surface layer. Most of this soil has been cleared and is used for row crops and hay. It is suited to all crops that are locally grown. (Capability unit IIIe-1)

Wadesboro fine sandy loam, 10 to 14 percent slopes (WaD).—This strongly sloping soil is thinner than Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded, and in many places it is coarser textured and less red in color. It is suited to all local crops, but most areas are wooded because they are poorly accessible or are too small for farming. (Capability unit IVe 1)

Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded (WaD2).—This strongly sloping, eroded soil is shallower than Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded. Small spots of the red subsoil are exposed

in cultivated fields. Most of the acreage is cleared and used for corn, small grains, and hay. Though very susceptible to erosion, this soil is suited to all crops that are locally grown if it is managed well. (Capability unit IVe-1)

Wadesboro fine sandy loam, 14 to 30 percent slopes (WaE).—This strongly sloping to steep soil is shallower than Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded. It is not suited to cultivated crops but is fairly well suited to pasture and trees. Most of the acreage is in small, scattered tracts and is wooded. (Capability unit VIe-1)

Wehadkee Series

The Wehadkee series consists of deep, poorly drained, friable soils that formed in recent alluvium along small and intermediate drainageways. These soils have a dark-gray to black, loamy surface layer. They have no accumulation of clay below this layer, and a well-defined subsoil is lacking. Slopes range from 0 to 2 percent.

These soils contain a moderate amount of organic matter, and their supply of available plant nutrients is moderately low. The available water-holding capacity is high. The soils are strongly acid.

Wehadkee soils occur with Chewacla soils. They are more poorly drained than Chewacla soils, and they are darker colored and more intensely mottled.

There is only one mapping unit of the Wehadkee series in Yadkin County. It is in small areas along most of the small and intermediate drainageways.

Wehadkee loams (We). -This mapping unit consists of various loams that were not mapped separately. These loams are poorly drained and formed in flats or depressions in alluvium along streams. They have a mottled, dark grayish-brown or grayish-brown surface layer.

Profile in the southeastern part of the county in a wet pasture that contains rushgrass, broomsedge, and scattered alders and willows (50 feet west of county road, 200 yards south of Deep Creek bridge, on bottom land of the Yadkin River):

A 0 to 15 inches, mottled dark grayish-brown (10YR 4/2) and grayish-brown (10YR 5/2) silt loam; massive (structureless); friable when moist; slightly sticky and nonplastic when wet; abrupt, smooth boundary.

C_1 15 to 36 inches, dark-gray to gray (N 4/0 to N 5/0) silty clay loam; few, fine, faint mottles of dark grayish brown; massive (structureless); friable when moist; nonplastic when wet; water table at 22 inches; clear, smooth boundary.

C_2 36 to 42 inches +, light-gray (N 6/0) silty clay loam; common, medium, distinct, brown mottles; massive (structureless); slightly sticky and slightly plastic when wet; contains some fine sand.

The surface layer ranges from silt loam to fine sandy loam in texture, from gray to dark gray in color, and from 10 to 20 inches in thickness. The underlying material ranges from very dark gray to light gray, from heavy silt loam to sandy clay loam, and is 10 to 36 inches thick over gravel. Included with these soils are some small areas of Chewacla soils and of Mixed alluvial land, poorly drained.

About half of Wehadkee loams has been cleared and is used about equally for cultivated crops and pasture. The rest is in hardwoods of low quality. Except for areas in pockets, these soils can be drained successfully with tile. After they are drained, they respond fairly well to good management. They are flooded at times, however, and water that stands on the surface after flooding is difficult to remove. Consequently, these soils are suited to only a narrow range of crops. Their best use is hay or pasture. (Capability unit IVw-1)

Wickham Series

The Wickham series consists of deep, well-drained, friable soils that formed in old alluvium on terraces along the Yadkin River. These soils have a brown, loamy surface layer and a red to yellowish-red, clay loam subsoil. Slopes range from 2 to 14 percent.

These soils contain moderately small amounts of organic matter and available plant nutrients. They are medium acid and are high in their capacity for holding available water.

The Wickham soils occur with the Altavista and Augusta soils and are at higher elevations than Augusta soils. They have an unmottled subsoil that is redder than that in the Altavista and Augusta soils.

In this county, Wickham soils are generally in large areas on the alluvial plain along the Yadkin River, chiefly near Enon.

Wickham fine sandy loam, 2 to 7 percent slopes, eroded (WfB2).—This is a deep, well drained soil with a red to yellowish-red, clay loam subsoil. It formed on old alluvial terraces at medium elevations along the principal streams.

Profile in a cultivated field in the eastern part of county (2 feet from east bank of county road, directly opposite cow barn on Taylor farm, 20 yards south of field road that crosses county road, 0.2 mile north of U. S. Highway 421):

A_p 0 to 11 inches, brown to dark-brown (7.5YR 4/4) fine sandy loam; weak, coarse, granular structure; friable when moist and hard when dry; few conspicuous clay peds; few waterworn fragments of size ranging from small pebbles to cobbles; many fine roots in top 6 inches; discontinuous A_2 horizon as much as 2 inches thick at bottom of layer; abrupt, smooth boundary.

B_{21} 11 to 19 inches, red (2.5YR 4/8) clay loam; weak, fine and medium, subangular blocky structure; friable when moist and hard when dry; distinct, discontinuous clay films; few fine roots in upper 4 inches; clear, wavy boundary.

B_{22} 19 to 29 inches, red (2.5YR 4/8) clay loam, faintly streaked with yellowish red (5YR 5/8); strong, fine and medium, angular blocky structure, almost platy; firm when moist and hard when dry; distinct, continuous clay films; clear, wavy boundary.

B_3 29 to 53 inches, red (2.5YR 4/8) clay loam distinctly flecked with brownish yellow (10YR 6/6); weak, fine, angular blocky structure to massive (structureless); friable when moist and hard when dry; few, distinct clay films; stone at depth of 53 inches.

The surface layer ranges from brown to dark grayish brown in color and from 6 to 12 inches in thickness. The subsoil ranges from red to reddish yellow and from clay to silty clay. It is firm to friable and 30 to 60 inches thick. Included with this soil are small areas of Wickham soils that have a loam surface layer, and small areas of Altavista and Hiwassee soils.

Most of this soil has been cleared and is used for row crops, chiefly corn and small grains. The soil is suited to most crops that are locally grown, and it can be

Figure 12.—**Landscape of Wilkes sandy loams.**

tilled within a wide range of moisture content. It is susceptible to moderate erosion if it is not protected. (Capability unit IIe-1)

Wickham fine sandy loam, 7 to 14 percent slopes, eroded (WfC2).—This soil is more sloping than Wickham fine sandy loam, 2 to 7 percent slopes, eroded. Included with it are small, scattered, severely eroded areas.

This soil is suited to crops commonly grown in the county. Most of the acreage has been cleared and is used for corn, small grains, and hay. Because it is generally on short, broken slopes, it is difficult to manage. (Capability unit IIIe-1)

Wilkes Series

The Wilkes series consists of shallow, well-drained soils on uplands of the Piedmont (fig. 12). These soils formed in residuum that weathered from mixed rocks. They have an olive-brown, loamy surface layer, but in most places they lack a well-defined subsoil. Where a subsoil is present, it is olive brown to dark yellowish-brown, heavy, plastic clay. Slopes range from 2 to 50 percent.

These soils have a moderately low content of organic matter and a moderate supply of available plant nutrients. They have a low available water holding capacity and are medium acid.

The Wilkes soils occur with the Lloyd and Cecil soils and are shallower and lighter colored than those soils. Also, they are somewhat coarser textured and generally lack a well-defined subsoil.

In this county, Wilkes soils are mostly along the eastern boundary on steep slopes along the Yadkin River. A small acreage has been cleared and used for row crops and hay, but most of the acreage is very steep and is in hardwoods of low quality.

Wilkes sandy loams, 2 to 10 percent slopes (WkC). - These are shallow, well-drained soils that generally lack a well-defined subsoil. Where a subsoil is present, it is a dark yellowish-brown or olive-colored, plastic clay. These soils formed in residuum that weathered from mixed acidic and basic rocks. They occupy narrow ridgetops and moderate slopes on uplands.

Profile in the eastern part of the county in an idle field containing broomsedge, weeds, and young shortleaf pine (0.3 mile north of old Butner Mill, 20 yards east of Butner Mill Road, 3 miles southeast of East Bend):

A_p 0 to 9 inches, olive-brown (2.5Y 4/4) sandy loam; weak, medium and fine, granular structure; very friable when moist; a few, small, black concretions of iron and small quartz pebbles; occasional medium-sized quartz pebbles and mixed rock fragments; many fine and few medium-sized roots; abrupt, smooth boundary.

AC 9 to 15 inches, dark yellowish-brown (10YR 4/4) heavy sandy loam, streaked with olive, black, and yellow; massive (structureless); firm when moist; small amount of clay that is firm when moist and plastic when wet; this deeply weathered, dark-colored, mixed rock material resembles the A_p layer but contains relic rock and tends toward development of a B horizon; common medium roots; common, medium and small, mixed rock and quartz fragments; clear boundary.

C 15 to 27 inches, dark yellowish-brown, weathered, mixed rock of heavy sandy loam texture, prominently streaked with black, olive, and yellow; massive (structureless); friable when moist; some clay peds and thin clay layers that are very plastic when wet; common fine mica particles and few medium roots; hard rock at depth of 27 inches.

The surface layer ranges from dark grayish brown to light olive brown in color, from sandy loam to fine sandy loam in texture, and from 12 to 18 inches in thickness. The underlying material has a weakly defined subsoil that is 8 to 20 inches thick over hard rock. Included with these soils are small areas of shallow Cecil and Lloyd soils.

Most of the acreage of these soils has been cleared and is used for row crops and hay. Because the soils are shallow and commonly gravelly, they are suited to only a narrow range of crops. They warm up early in spring, however, and are good soils for brightleaf tobacco. They are very erodible and require careful management if they are cultivated. (Capability unit IIIe-4)

Wilkes sandy loams, 2 to 10 percent slopes, severely eroded (WkC3).—These soils differ from Wilkes sandy loams, 2 to 10 percent slopes, in that they have lost nearly all of their original surface layer through erosion and the infertile underlying material is exposed. Most of the acreage is idle or is in poor stands of Virginia pine. These soils are not suited to cultivated crops or to pasture, and they are poorly suited to trees. Their best use is wildlife food and cover. (Capability unit VIIe-2)

Wilkes sandy loams, 10 to 14 percent slopes (WkD).—These strongly sloping soils are shallower than Wilkes sandy loams, 2 to 10 percent slopes. They are characterized by shallow, gravelly areas and outcrops of bedrock. Of the total acreage, about half is cleared and half is wooded. The cleared areas are commonly planted to brightleaf tobacco. These soils have a limited range of suitability for use, and they are difficult to manage. (Capability unit IVe-4)

Wilkes sandy loams, 10 to 25 percent slopes, severely eroded (WkE3).– These soils differ from Wilkes sandy loams, 2 to 10 percent slopes, in having lost all of their surface layer through accelerated sheet and gully erosion. They are not suited to cultivated crops or to pasture, but they can be used to grow pine trees and plants for wildlife food and cover. Most of the acreage is in small, scattered areas that are idle or poorly wooded. These areas occur on the borders of cultivated Wilkes soils that are less steep than these soils. (Capability unit VIIe-2)

Wilkes sandy loams, 14 to 25 percent slopes (WkE).—These steep soils are shallower than Wilkes sandy loams, 2 to 10 percent slopes. Bedrock outcrops and gravelly spots are common. Though they are not suited to crops, these soils are fairly well suited to pasture. But pasture is hard to establish and maintain, and yields are low. Most of the acreage is now in woods. (Capability unit VIe 3)

Wilkes sandy loams, 25 to 50 percent slopes (WkF).—These steep soils are shallower than Wilkes sandy loams, 2 to 10 percent slopes. They are gravelly and contain many outcrops of bedrock. They are not suited to crops or pasture and are poor soils for trees. Most of the acreage is woodland of low quality. (Capability unit VIIe-2)

Worsham Series

The Worsham series consists of deep, poorly drained, friable soils with a dark-gray surface layer and a highly mottled gray, clayey subsoil. These soils are along the flats and at the heads of small drainageways in the uplands of the Piedmont. Their parent material is colluvium that washed or rolled from soils derived from acid, crystalline rock. Slopes range from 0 to 7 percent.

These soils have a moderately low content of organic matter and contain a small amount of available plant nutrients. They have a moderate available water-holding capacity and are strongly acid.

Worsham soils differ from the Mixed alluvial lands in being darker gray, more intensely mottled, and having a well-defined subsoil.

There is only one soil in the Worsham series in Yadkin County. It is in small, scattered areas throughout the uplands of the Piedmont.

Worsham fine sandy loam, 0 to 7 percent slopes (WoB).—This is a deep, poorly drained soil that has a gray, mottled clay subsoil. It formed in colluvium and residuum near springs and along intermittent drainageways in upland areas.

Profile in an idle field that contains wild grasses, tall weeds, and black-alders (3.3 miles east of Wilkes County line, on south side of U.S. Highway 421, on east bank of drainage ditch):

A_p 0 to 6 inches, grayish brown (2.5Y 5/2) fine sandy loam; moderate, medium and coarse, granular structure; hard when dry, friable when moist; common fine roots; abrupt, smooth boundary.

B_1 6 to 13 inches, brown (10YR 5/3) silty clay loam with common, distinct mottles of strong brown (7.5YR 5/8) and pale brown (10YR 6/3); moderate, medium, subangular blocky structure; firm; clear, wavy boundary.

B_2 13 to 24 inches, light-gray to gray (10YR 6/1) silty clay with many distinct mottles of strong brown (7.5YR 5/8) and red (2.5YR 4/8); weak, medium, angular blocky structure or massive (structureless); firm; thin, patchy clay films; few small quartz pebbles; clear, smooth boundary.

B_3 24 to 32 inches, light-gray (7.5YR 6/0) sandy clay loam with distinct mottles of strong brown and yellowish red; massive (structureless); firm; clear, smooth boundary.

C 32 to 42 inches +, light-gray heavy sandy loam with few distinct mottles of yellowish red and white; massive (structureless); friable; deeply weathered granite gneiss.

The surface layer ranges from very dark grayish brown to grayish brown in color and from 5 to 10 inches in thickness. The subsoil is grayish brown to gray and is mottled. The texture of the subsoil ranges from clay loam to sandy clay, and its thickness from 18 to 36 inches. Included with this soil are areas that have a silt loam or a sandy loam surface layer and small areas of Local alluvial land.

About half of this soil is cleared, and the rest is covered by hardwoods in inaccessible bottom land areas. Most of the cleared acreage is used for pasture and hay. The soil is suitable for cultivation, but it warms up late in spring and is difficult to work. Tile or open ditches can be used to remove excess water. This soil is suited to only a narrow range of crops, and its best use is probably pasture. (Capability unit IVw 2)

Formation and Classification of Soils

This section consists of two main parts. The first part describes the factors of soil formation and tells how these factors affected the formation of soils in Yadkin County. In the second part, the classification of soils is explained, the soil series in the county are placed in their respective great soil groups, and the morphology of the great soil groups and of the soil series in the groups is described.

Factors of Soil Formation

Soil is a function of climate, living organisms, parent material, topography, and time. The nature of the soil at any point on the earth depends upon the combination of these five factors at that point. All five of the factors come into play in the genesis of every soil. The relative importance of each differs from place to place; sometimes one is more important and sometimes another. In many places one or two of the factors may dominate the formation of the soil and fix most of its properties, but in every place the way the five factors combined in the past determines the present character of every soil (*5, 6*). Differences in soils on uplands in Yadkin County result from differences in parent materials and topography.

Climate

Climate affects physical and chemical weathering and the biological forces at work in the soil, primarily through the influences of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports minerals and organic residues through the soil profile. The amount of water that percolates through the soil in a broad area depends mainly on rainfall, relative humidity, and the length of the frost-free period. At a given point, the amount of percolation downward is also affected by the physiographic positions and by soil permeability. Temperature influences the kinds and growth of organisms and the speed of physical and chemical reactions in soils. Local variations in climate cause some characteristics to differ from those of soils developed under the prevailing climate of the region.

The soils in Yadkin County are generally dry or moderately dry in summer. Evapotranspiration equals or

exceeds rainfall for most of the growing season. In winter, however, the soils are moist and subject to leaching much of the time. They are frozen to a shallow depth for only short periods. Freezing and thawing in the county, therefore, have slight effect on weathering and on formation of soil.

Living organisms

Living organisms are indispensable in soil development. Bacteria, fungi, and other forms of microscopic life aid in weathering rock and decomposing organic matter. The larger plants and animals that live in the soil alter the climate of the soil where they live, furnish organic matter, and transfer elements from the subsoil to the surface soil.

The kinds and numbers of plants and animals that live on and in the soil are determined in large part by the climate and, to varying degrees, by parent material, relief, and age of the soil.

Not much is known of the fungi and micro-organisms in the soils of this county, except that most of them are in the uppermost few inches. The earthworms and other small invertebrates carry on a slow, continual soil mixing, mostly in the A_1 horizon. Rodents do not appear to have mixed much soil material in the county.

Yadkin County was covered by a forest of white oak, red oak, and hickory. In some local areas, windthrow has mixed soil materials, but this mixing generally is not important.

Parent material

Parent material is the unconsolidated mass from which a soil forms. It is largely responsible for the chemical and mineralogical composition of soils. In Yadkin County the parent materials of most of the soils are residual; that is, they formed in place through the weathering of the underlying hard rock. The rocks of the county are chiefly mica gneiss, mica schist, granite, diorite-gabbro, quartzite, and schist (*4*).

The soils along the larger streams in the county are formed chiefly from materials moved and deposited by water. This alluvium originated from the rocks of uplands in the watershed. The soils on the first bottoms are weakly developed and may have other materials deposited on them, but the soils on old terraces and on benches have been in place long enough for soil horizons to develop. Along the smaller streams and drainageways are areas of local alluvium that have been only slightly modified by soil-forming processes.

Topography

Topography is largely determined by the geologic history of a region, including dissection by rivers and streams. It influences soil formation through its effects on moisture content, erosion, temperature, and plant cover. The influence of topography is modified by the other four factors of soil formation.

In Yadkin County slopes range from 0 to 50 percent. In upland areas the profiles of Cecil, Lloyd, Appling, and other soils are thick and well defined in soils with slopes of less than 15 percent. Where slopes are steeper than 15 percent, runoff is rapid, little water infiltrates to influence soil forming, and the surface layer may be removed almost as fast as it is formed. As a result, many of the soils on steeper slopes are thin and have weakly-defined profiles. Most soils in alluvium are nearly level.

Time

The length of time that is required for a soil to develop depends largely on the other factors of soil formation. Less time is generally required for a soil to develop in a humid, warm region covered with dense vegetation than in a dry, cold region with scanty vegetation. Under the same environment, less time is required for a soil to develop from coarse-textured parent material than from similar but finer textured material.

The ages of soils vary considerably. Old soils generally show better defined horizons than young soils. The soils in this county have developed to maturity on the smoother parts of the upland and on the old stream terraces. On the steep slopes, geologic erosion has removed soil material so rapidly that the soils are generally shallower to bedrock and have less development. On the first bottoms and in the small areas of local alluvium, the soil materials have been in place for such a short time that development is not mature.

Cecil soils are examples of old soils with strongly defined horizons. They have formed on upland slopes that have remained stable for long periods. Congaree soils, however, are young, have formed in recent alluvium, and show little horizonation.

Classification of Soils

In the system of soil classification commonly used in the United States soils are placed in four categories (*5*, *6*). From the broadest category to the narrowest, these are the order, great soil group, series, and type.

In the broadest category the soils of the whole country are grouped into three orders, and in the narrowest category are thousands of soil types. Within counties, soils are classified in soil series and types and these categories are then grouped in great soil groups and soil orders.

Soils in the broadest category are classified in three soil orders—zonal, intrazonal, and azonal. The zonal order consists of soils with evident, genetically related horizons that reflect the dominant influence of climate and living organisms in their formation. In Yadkin County the zonal soils have been classified by great soil groups as Red-Yellow Podzolic soils, Reddish-Brown Lateritic soils, and Gray-Brown Podzolic soils.

The intrazonal order consists of soils with evident, genetically related horizons that reflect the dominant influence of a local factor of topography or parent material, over the effects of climate and living organisms. In Yadkin County the great soil groups in the intrazonal order are Planosols and Low-Humic Gley soils.

The azonal order consists of soils that lack distinct, genetically related horizons, commonly because the soils are young, have resistant parent material, or are on steep

slopes. The great soil groups in Yadkin County in the azonal order are Lithosols and Alluvial soils.

The soils within the central concept of the Red-Yellow Podzolic soils occupy more than 75 percent of the county. Red-Yellow Podzolic soils that grade toward Reddish Brown Lateritic soils occupy about 5 percent of the county. Lithosols and soils similar to Lithosols occupy about 4 percent of the county. The rest of the county is in Reddish-Brown Lateritic soils, Planosols, Gray-Brown Podzolic soils, Alluvial soils, and Low-Humic Gley soils.

Table 8 lists the soil series by great soil groups and gives for each series some characteristics that are important in the formation of soils. A profile representative of each soil series is described in detail in the section "The Soils of Yadkin County." Each great soil group represented in Yadkin County is discussed in the following pages.

TABLE 8.— *Soil series classified in great soil groups, and some factors of soil formation*

Great soil group and soil series	Brief profile description [1]	Position	Drainage	Slope	Parent material
				Percent	
Red-Yellow Podzolic soils (central concept):					
Altavista	Dark yellowish-brown fine sandy loam over yellowish-brown silty clay.	Low terraces	Moderately good to good.	0 to 10	Old alluvium.
Appling	Grayish brown fine sandy loam over yellowish-red clay.	Upland slopes and ridges.	Good	2 to 45	Residuum from gneiss, schist, and granite gneiss.
Cecil	Dark-brown and yellowish-brown fine sandy loam over red clay.	Upland slopes and ridges.	Good	2 to 40	Residuum from granite gneiss, gneiss, and schist.
Georgeville	Brown silt loam over red to yellowish-red, firm silty clay.	Upland slopes and ridges.	Good	2 to 25	Residuum from Carolina slates.
Halewood	Dark-gray stony sandy loam over strong-brown, friable clay loam.	Upland slopes and ridges.	Good	7 to 10	Residuum from granite gneiss, gneiss, and schist.
Hayesville	Very dark grayish-brown fine sandy loam over friable, red clay or clay loam.	Upland slopes and ridges.	Good	7 to 40	Residuum from granite gneiss, gneiss, and schist.
Madison	Dark-brown fine sandy loam over micaceous red clay.	Upland slopes and ridges.	Good	2 to 40	Residuum from quartz mica schist and mica gneiss.
Mayodan	Dark-gray fine sandy loam over yellowish-red clay.	Upland slopes and ridges.	Good	2 to 40	Residuum from Triassic shale and sandstone.
Wadesboro	Reddish-brown fine sandy loam over dark-red, firm clay.	Upland slopes and ridges.	Good	2 to 30	Residuum from Triassic shale and sandstone.
Wickham	Brown to dark-brown fine sandy loam over yellowish-red, firm clay.	Low to medium terraces.	Good	2 to 11	Old alluvium.
Red-Yellow Podzolic soils (grading toward Reddish-Brown Lateritic soils):					
Lloyd	Dark reddish-brown loam over dark-red, firm clay.	Upland slopes and ridges.	Good	2 to 40	Residuum from mixed gneiss, gabbro, diorite, and hornblende gneiss.
Red-Yellow Podzolic soils (grading toward Low-Humic Gley soils):					
Augusta	Dark grayish-brown silt loam over yellowish-brown, friable clay loam mottled with gray.	Low terraces	Somewhat poor.	0 to 6	Old alluvium.
Reddish-Brown Lateritic soils (central concept):					
Davidson	Dark reddish-brown clay loam over dark-red clay.	Upland slopes and ridges.	Good	2 to 10	Residuum from diorite, gabbro.
Hiwassee	Dark-brown loam over dark-red clay.	High terraces	Good	2 to 7	Old alluvium.

See footnote at end of table.

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TABLE 8.—*Soil series classified in great soil groups, and some factors of soil formation*—Continued

Great soil group and soil series	Brief profile description [1]	Position	Drainage	Slope	Parent material
Reddish-Brown Lateritic soils (grading toward Planosols):				*Percent*	
Mecklenburg	Dark yellowish-brown loam over firm, yellowish-red, heavy clay.	Upland slopes and ridges.	Good	2 to 25	Residuum from diorite, gabbro, and associated rocks.
Gray-Brown Podzolic soils:					
State	Dark-brown fine sandy loam over yellowish-brown, friable clay loam.	Low terraces	Good	0 to 2	Old alluvium.
Planosols:					
Iredell	Grayish-brown fine sandy loam over olive-brown, plastic clay.	Upland flats and sloping ridges.	Moderately good.	2 to 14	Residuum from diabase, diorite, gabbro.
Lithosols:					
Louisburg	Dark grayish-brown coarse sandy loam over weathered, coarse-textured gneiss.	Upland slopes and narrow ridges.	Good	7 to 50	Residuum from coarse gneiss and granite.
Wilkes	Olive-brown sandy loam over weathered, mixed rocks.	Upland slopes and narrow ridges.	Good	2 to 50	Residuum from mixed rocks.
Low-Humic Gley soils:					
Wehadkee	Grayish-brown silt loam	First bottoms	Poor	0 to 2	Alluvium.
Worsham	Grayish-brown fine sandy loam over gray, firm silty clay.	Upland depressions and draws.	Poor	0 to 7	Residuum from gneiss and local alluvium.
Alluvial soils (central concept):					
Congaree	Brown or olive-brown fine sandy loam.	First bottoms	Good	0 to 3	Alluvium.
Buncombe	Olive-brown to yellowish-brown loamy sand or sand.	First bottoms	Excessive	0 to 3	Alluvium.
Starr	Dark reddish-brown loam over dark-red, friable clay loam.	Upland depressions	Good	0 to 7	Local alluvium and colluvium.
Alluvial soils (grading toward Low-Humic Gley soils):					
Chewacla	Dark-brown to brown silt loam over grayish or gray-mottled silt loam.	First bottoms	Somewhat poor.	0 to 2	Alluvium.

[1] Descriptions are of profiles that have not been affected much by accelerated erosion.

Red-Yellow Podzolic soils

This great soil group consists of well-developed, well-drained, acid soils that formed under a forest in a warm-temperate humid to tropical humid climate. The soils have a thin organic (A_0) horizon, an organic-mineral (A_1) horizon, and a light-colored, bleached (A_2) horizon, over a red, yellowish-red, or yellow clayey (B) horizon. The parent material is more or less siliceous.

The soils of this group generally have low cation-exchange capacity and low base saturation. Kaolinite is the dominant clay mineral. The subsoil has moderate to strong, subangular blocky structure and colors of medium to high chroma.

In Yadkin County, undisturbed Red-Yellow Podzolic soils have a thin, dark-colored A_1 horizon with a content of organic matter of more than 3 percent. The A_2 horizon is well defined, but its structure is weak and granular and its organic-matter content is less than 2 percent. The B_2 horizon contains more clay than the A_2 horizon and has a moderate to strong, subangular blocky structure. These soils are medium to strongly acid. The C horizon contains less clay than the B_2 horizon and has a weak structure or is relic rock.

The Red-Yellow Podzolic soils of Yadkin County are in the Altavista, Appling, Augusta, Cecil, Georgeville, Halewood, Hayesville, Lloyd, Madison, Mayodan, Wadesboro, and Wickham series. All of these soils but the Lloyd and Augusta soils represent the central concept of the Red-Yellow Podzolic great soil group.

The subsoil of the Cecil, Georgeville, Hayesville, Madison, and Wadesboro soils is moderately thick and red or dark red with hue of 2.5YR and chroma of 4 or higher. Its structure is moderate, medium, subangular blocky. The Georgeville soils are finer textured throughout the profile and contain more silt than the other soils. The Madison soils contain more mica than the other soils in the group, and the Hayesville soils have a thinner solum.

The Appling, Halewood, and Mayodan soils have similar characteristics in the A and B horizons. They differ from the Cecil soils in having a less reddish B_2 horizon, which is 7.5YR or 5YR instead of 2.5YR in hue.

The Altavista and Wickham soils have developed in old alluvium that originated chiefly from gneiss, schist,

and other metamorphic rocks. The Altavista soils are less well drained than the Cecil soils and are less red in the B_2 horizon. The Wickham soils are well drained but have a browner A horizon than the Cecil soils.

The Lloyd soils are Red-Yellow Podzolic soils that have some characteristics of the Reddish-Brown Lateritic soils. They have a less distinct A_2 horizon than the Cecil soils and are darker red in the B horizon. Lloyd soils are less acid than representative Red-Yellow Podzolic soils and have a darker red B horizon and slightly higher base saturation than those soils.

Augusta soils are Red-Yellow Podzolic soils that grade toward Low-Humic Gley soils. These soils have a distinct A_2 horizon, contain more clay in the B_2 horizon than is characteristic of representative Red-Yellow Podzolic soils, and are gleyed in the lower part of their profile. Augusta soils formed in old alluvium and are somewhat poorly drained.

Reddish-Brown Lateritic soils

This great soil group consists of well-drained, acid soils formed under a forest in climates that range from warm-temperate humid to tropical humid. These soils have a dark reddish-brown, granular surface soil; a red, friable clayey B_2 horizon; and red or reticulately mottled, lateritic parent material. They lack a distinct A_2 horizon like that in Red-Yellow Podzolic soils, and they have a darker red B horizon than those soils. The B horizon commonly has a moderate to strong, subangular blocky structure and clay films on the faces of peds and in root and worm channels.

The Davidson and the Hiwassee soils represent the central concept of the Reddish-Brown Lateritic soils in Yadkin County. These soils have a dark colored A horizon but lack an A_2 horizon. The B horizon is thick, dark red, and clayey. The Davidson soils developed in residuum that weathered from hornblende gneiss, gabbro, diorite, and other rocks. The Hiwassee soils developed in old alluvium washed from material that weathered from basic rocks. These soils are less acid than the Red Yellow Podzolic soils and have a higher base saturation.

The Mecklenburg soils are Reddish-Brown Lateritic soils that have some characteristics of Planosols. They have many characteristics of the Reddish-Brown Lateritic soils, but their heavy clay B_2 horizon is common in the Planosols.

Gray-Brown Podzolic soils

This great soil group consists of soils that have a thin, dark-colored A_1 horizon and a leached, brownish A_2 horizon. The B_2 horizon is yellowish brown to brown and is finer textured than the A horizon. Gray-Brown Podzolic soils formed under a forest in a temperate, humid climate. They are commonly medium acid and are higher in base saturation than the Red-Yellow Podzolic soils.

State soils are the only Gray Brown Podzolic soils in Yadkin County. The State soils developed in old alluvium that originated from rocks with a high content of ferromagnesium minerals. These soils have a brown to dark-brown surface soil and a yellowish brown, friable subsoil. They are medium acid and have a relatively high base saturation.

Planosols

In this great soil group are soils that have, at varied depths, a well-defined layer of clay or cemented material. These soils are very slowly permeable and have somewhat restricted drainage.

Iredell soils are the only Planosols in Yadkin County. These soils have a grayish-brown, fine sandy loam surface soil, and an olive-brown, plastic clay B_2 horizon. They are slightly acid and have a high base saturation.

Lithosols

Lithosols are immature soils that have no clearly expressed soil morphology. They commonly occur on steep slopes and have a thin or incomplete solum.

The Louisburg and Wilkes soils are the Lithosols in this county. The Louisburg soils are shallow and consist of coarse sandy loam formed in residuum that weathered from coarse-grained granite and gneiss. These soils are strongly acid and have a low base saturation.

The Wilkes soils are Lithosols that have some characteristics of Red-Yellow Podzolic soils. Wilkes soils are shallow and formed in residuum weathered from mixed felsic and mafic rocks. In most places they have a weakly defined A_2 horizon. The B horizon is thin or lacking. These soils are medium acid to slightly acid and have a high base saturation.

Low-Humic Gley soils

Low-Humic Gley soils are imperfectly drained to poorly drained. They have a thin, dark-colored surface horizon that is moderately high in organic matter. The surface horizon is underlain by mottled gray and brown mineral horizons that are gleylike and differ only slightly in texture.

The Worsham and Wehadkee soils are the Low-Humic Gley soils in Yadkin County. In texture the surface horizon and the gleylike mineral horizon of these soils differ from each other more than do those horizons in typical Low Humic Gley soils. Worsham and Wehadkee soils are strongly acid and have low base saturation.

Alluvial soils

Alluvial soils have developed in alluvium that has been transported and deposited fairly recently. This alluvium has been changed little or none by soil-forming processes.

The Buncombe, Chewacla, Congaree, and Starr soils are the Alluvial soils in Yadkin County. The Buncombe and Congaree soils are on the flood plains of streams, and the Starr soils are in depressions and draws. Where they occur in recent alluvium, no horizons have formed. In old alluvium, the difference between horizons is slight.

The Congaree soils are brown, friable fine sandy loam or silt loam. The Buncombe soils are yellowish to olive-brown loamy sand or sand. The Starr soils consist of dark reddish-brown loam formed in local alluvium that washed or rolled from Davidson and Lloyd soils. These Alluvial soils are well drained.

The Chewacla soils are on water laid material and have some characteristics of Low-Humic Gley soils. Except for a gleylike mineral horizon at a depth of 12 to 20 inches, the horizons in the Chewacla soils differ little. These soils are somewhat poorly drained.

General Nature of the Area

Yadkin County is in the northwestern part of North Carolina, almost wholly on the rolling Piedmont Plateau. The county has an area of 214,400 acres. It is bounded on the north by Surry County, on the east by Forsyth County, on the south by Davie and Iredell Counties, and on the west by Wilkes County. The Yadkin River forms the boundary between Yadkin County and Surry and Forsyth Counties. Yadkinville, the county seat, is on a broad plain at the junction of U.S. Highways 421 and 601.

Physiography, Relief, and Drainage

Except for the small area of the Brushy Mountains in the northwestern part of the county, Yadkin County is on the Piedmont Plateau. The average elevation is about 1,000 feet. The lowest point in the county is about 710 feet and is on the Yadkin River at the mouth of Deep Creek. The highest point, at the top of the Brushy Mountains west of Rena, is more than 1,600 feet.

The county is drained by the Yadkin River and its tributaries, mainly Logan, Forbush, Deep, North Deep, South Deep, and Turner Creeks. All of these streams run into the Yadkin River along the eastern boundary of the county.

The soils of the county are generally well drained, but the bottom land along the Yadkin River and its tributary streams is flooded at times. In 1960, a watershed plan was put into effect to control the runoff from about 73,500 acres that are drained by North Deep Creek and South Deep Creek. If runoff from these watersheds is controlled, bottom land is less likely to be damaged by floods.

Transportation

Yadkin County is not served by a railroad, but rail service is available at Donnaha in Forsyth County and at Crutchfield and Elkin in Surry County. All towns in the county have bus and truck service. Most roads in the county are paved.

The three U. S. highways and the one State highway in the county are accessible from all sections. U. S. Highways 421 and 601 cross the central part, Highway 421 from east to west, and Highway 601 from north to south. U. S. Highway 21 crosses the western part from north to south. State Highway 67 crosses from east to west. These roads provide routes to markets in all kinds of weather. Nearly all agricultural products are sold outside the county.

Community Facilities

Yadkin County has two elementary schools, six high schools, and one general school. About 100 churches are located throughout the county. Electricity is available to 99 percent of the homes, and many homes have telephone service. The county has a 70-bed modern hospital, and medical care is also available at the Baptist Hospital and the Bowman Gray School of Medicine in Winston-Salem.

Settlement and Population

Yadkin County, formerly a part of Surry County, was created by an act of the General Assembly of North Carolina in 1850 and 1851. It is named for the river that forms its northern and eastern boundaries.

A group of families, probably Moravians from Forsyth County, settled near the present village of Huntsville in about 1760. Later the rest of the county was settled by people of Scotch-Irish and English descent, who migrated northward in small numbers from Rowan County.

In 1890, the population of the county was 13,790. Between 1890 and 1960, the population increased to 22,804, a gain of about 60 percent. Although nearby Forsyth County has become heavily populated and industrialized, Yadkin County has remained largely agricultural. The population is well distributed in rural communities, and there are no large towns. In 1960, the population of Jonesville was 1,895; of East Bend, 446; of Boonville, 539; and of Yadkinville; 1,644.

Industries

A few industries have been established in Yadkin County. The most important industry is the processing of lumber, and there are many sawmills. The county has a foundry and a wood-treating plant, and there are small plants for making tobacco baskets, braids, plastics, and soft drinks.

Water Supply

Wells supply all of the water for municipal and domestic use in the county. Some wells are 300 feet deep, but most of them are between 50 and 150 feet deep. Water for a number of homes is pumped from shallow, covered wells. Most homes have running water.

The Yadkin River and the many streams that flow through the county supply water for livestock and other uses. Nearly every farm is on one or more drainageways, and more than 250 ponds and lakes have been built to provide water for livestock, irrigation, and recreation.

Climate

Yadkin County has a mild, continental climate. Seasonal changes are less extreme than in areas farther from the Atlantic Ocean. Complete temperature and precipitation records are not available for any place in the county, but the data in table 9 for Winston-Salem, in adjacent Forsyth County, are representative of the county.

Summer is warm but is not excessively hot. The average summer temperature is between 70° and 80° F. In most summers the temperature ranges from the 80's to the 90's in the daytime and drops to the high 60's at night. It seldom reaches the high 90's, although a reading of 104° has been recorded.

In December, January, and February, the temperature occasionally falls to near zero, but winter is generally not severe. The average temperature in winter is about 40°. An extreme reading of −10° has been recorded.

The average annual precipitation of 44.44 inches, at Winston-Salem, is normally well distributed throughout

TABLE 9. *Temperature and precipitation at Winston-Salem, Forsyth County, N.C.*

[Elevation, 967 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Highest extreme	Lowest extreme	Average	Monthly maximum	Monthly minimum	Average snowfall
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
December	39.9	79	−3	3.52	7.75	0.56	1.8
January	39.2	79	−10	3.48	11.59	.32	2.9
February	40.9	83	−1	3.59	8.76	1.18	2.0
Winter	40.0	83	−10	10.59			6.7
March	48.6	91	9	4.02	9.32	1.51	2.0
April	57.7	93	21	3.52	6.92	.58	.2
May	66.9	101	31	3.91	7.52	.15	0
Spring	57.7	101	9	11.45			2.2
June	74.6	104	40	4.06	9.97	.67	0
July	77.4	104	48	4.78	10.86	.59	0
August	76.1	104	48	4.59	12.92	.80	0
Summer	76.0	104	40	13.43			0
September	70.5	102	36	3.36	10.04	.24	0
October	59.4	96	21	3.03	8.23	.25	0
November	48.1	84	2	2.58	7.15	.28	.2
Fall	59.3	102	2	8.97			.2
Year	58.3	104	−10	44.44	12.92	.15	9.1

[1] Temperature from 61-year record through 1960.
[2] Precipitation, except snowfall, from 61-year record through 1960; snowfall from 47-year record through 1960.

the year. The average annual snowfall is 9.1 inches. Most winters have snow, but it rarely stays on the ground for more than a week. Ice storms occasionally damage trees and communication and power lines.

The average frost-free period, or growing season, extends from around April 9 to the latter part of October, a period of about 200 days. The average grazing season for permanent grass pasture is about 240 days. The earliest recorded killing frost in spring was March 1, and the latest in spring was May 15. The earliest recorded killing frost in fall was October 8, and the latest in fall was November 24.

Probability of freezing temperatures

According to adjusted data of the North Carolina Agricultural Experiment Station (*2*), the chances of a killing freeze are as follows: In spring after March 23, 9 in 10; after April 1, 3 in 4; after April 9, 1 in 2; after April 17, 1 in 4; and after April 25, 1 in 10. In fall before October 13, 1 in 10; before October 20, 1 in 4; before October 28, 1 in 2; before November 5, 3 in 4; and before November 12, 9 in 10.

It is helpful for a farmer to know the likelihood of light, moderate, and severe freezes in spring and fall, for then he can select the safest planting dates for frost-sensitive and frost-hardy crops. In table 10 are listed the chances that there will be freezing temperatures of stated intensities in spring after the dates listed and in fall before the dates listed.

Probability of drought

Drought exists when not enough moisture is available in the soil to supply the needs of growing crops (*9*). The frequency and intensity of drought depends mainly on (1) the distribution of crop roots in the soil; (2) the capacity of the soil to supply water to plants; and (3) the amount and distribution of rainfall.

If a farmer knows when damaging drought is most likely to occur and the kinds of crops that will resist drought on certain soils, he can plant crops that are less likely to be damaged. He will know the risk he takes in planting certain crops on certain soils. If he knows the frequency of dry spells, and how long they are likely to last, he can estimate the value of irrigation and decide whether an irrigation system will increase crop yields enough to offset the cost.

ESTIMATING CHANCE OF DROUGHT DAMAGE TO A CROP

Lists A and B can be used with table 11 to judge the likelihood that drought will damage a particular crop on a specified soil. In list A find the name of the crop and the average depth of its root zone. Then turn to list B where total capacity of soils to hold moisture is given for 12-inch, 18 inch, 24 inch, 30-inch, and 36-inch depths. When you have learned the available moisture capacity of the soil down to depth where roots of the crops will penetrate, turn to table 11, where you are given the chances of drought days by months for capacities that range in inches, from 0.6 to 1.5, 1.6 to 2.5, 2.6 to 3.5, and 4.6 to 5.5.

TABLE 10. *Chance of last freezing temperature in spring and first in fall*

Chance [1]	Intensity of freeze in spring			Intensity of freeze in fall		
	Light (32° to 28° F.) after—	Moderate (28° to 24° F.) after	Severe (24° F. or below) after—	Light (32° to 28° F.) before —	Moderate (28° to 24° F.) before—	Severe (24° F. or below) before
1 in 2	Apr. 9	Mar. 26	Mar. 9	Oct. 28	Nov. 9	Nov. 21.
1 in 4	Apr. 17	Apr. 6.	Mar. 31	Oct. 20	Nov. 1	Nov. 13.
1 in 10	Apr. 25	Apr. 16	Apr. 11.	Oct. 13	Oct. 24	Nov. 6.

[1] Chance that there will be light, moderate, and severe freezes in spring after date indicated and in fall before date indicated.

List A: Normal Root Zone for Crops

Eighty percent of roots at depth not exceeding—

12 inches	*18 inches*	*24 inches*	*30 inches*	*36 inches*
Grasses, annual	Cabbage	Asparagus	Grasses, perennial	Alfalfa
Lespedeza, annual	Clover, crimson	Cantaloup		Fruit trees
Lettuce	Clover, ladino	Corn		Kudzu
Kale	Cowpeas	Okra		Lespedeza, sericea
Mustard	Lima beans	Sorghum, grain		
Onions	Tobacco			
Turnips	Tomatoes			
Small grains				
Spinach				

List B: Total Available Moisture

Average available moisture, in inches of water, in soil from surface to

Soils	*12-inch depth*	*18-inch depth*	*24-inch depth*	*30-inch depth*	*36-inch depth*
Altavista fine sandy loam	1.3	2.4	3.4	4.4	5.2
Appling fine sandy loam	1.2	2.1	3.1	4.0	4.7
Augusta silt loam	1.5	2.4	3.3	4.2	4.9
Buncombe loamy sand	0.7	1.3	1.7	2.2	2.8
Buncombe sand	0.7	1.3	1.7	2.2	2.8
Cecil fine sandy loam	1.4	2.3	3.3	4.2	5.0
Cecil loam	1.7	2.7	3.7	4.7	5.5
Cecil gravelly fine sandy loam	1.4	2.3	3.3	4.2	5.0
Cecil clay loam	1.4	2.3	3.3	4.2	5.0
Chewacla silt loam	1.5	2.4	3.3	4.2	4.9
Congaree fine sandy loam	1.1	1.9	2.7	3.5	4.3
Congaree silt loam	1.5	2.2	2.9	3.6	4.5
Davidson clay loam	1.7	2.7	3.7	4.7	5.5
Georgeville silt loam	1.6	2.5	3.5	4.4	5.1
Halewood stony sandy loam	1.0	1.5	2.2	2.7	(1)
Hayesville and Cecil clay loams	1.7	2.7	3.7	4.7	5.5
Hayesville and Cecil fine sandy loams	1.3	1.9	2.5	3.0	(1)
Hiwassee loam	1.7	2.7	3.7	4.7	5.5
Iredell fine sandy loam	1.9	(1)	(1)	(1)	(1)
Lloyd clay loam	1.4	2.3	3.3	4.2	5.0
Lloyd loam	1.7	2.7	3.7	4.7	5.5
Local alluvial land	1.3	2.0	2.7	3.3	4.0
Louisburg coarse sandy loam	0.8	1.3	1.8	2.4	(1)
Madison fine sandy loam	1.3	2.1	2.9	3.7	4.4
Madison gravelly fine sandy loam	1.3	2.1	3.9	3.7	4.4
Mayodan fine sandy loam	1.2	2.1	3.1	4.0	4.7
Mecklenburg loam	1.7	2.7	3.7	4.7	5.5
Mixed alluvial land, poorly drained	1.5	2.2	2.9	3.6	4.5
Mixed alluvial land, well drained	1.3	2.0	2.7	3.3	4.0
Starr loam	1.7	2.7	3.7	4.7	5.5
State fine sandy loam	1.3	2.0	2.7	3.3	4.0
Wadesboro fine sandy loam	1.4	2.3	3.3	4.2	5.0
Wehadkee loams	1.5	2.2	2.9	3.6	4.5
Wickham fine sandy loam	1.3	2.4	3.4	4.4	5.2
Wilkes sandy loams	0.8	1.3	1.8	2.4	(1)
Worsham fine sandy loam	1.5	2.2	2.9	3.6	4.5

[1] Water generally not available at depth shown.

Suppose you want to know how likely it is that there will be dry days in July that will retard the growth of corn on Appling fine sandy loam. In list A you note that corn has most of its roots in the top 24 inches of soil; therefore, in list B you read under "24-inch depth" and find that Appling fine sandy loam holds an average of 3.1 inches of available moisture to a depth of 24 inches. Then turn to table 11 and find the column giving 2.6 to 3.5 inches of moisture, the range within which 3.1 inches falls, and read under the "chance" column the chances of days when drought will damage corn. The chances are 1 in 10 that there will be at least 19 drought days in July, 2 in 10 that there will be at least 14 drought days, 3 in 10 that there will be at least 10 drought days, and 5 in 10 that there will be at least 4 drought days.

Or, again, suppose you want to know the likelihood of dry days in June that will retard growth of tobacco if it is planted on Cecil fine sandy loam. Tobacco has most of its roots in the top 18 inches (list A), and to that depth (list B) Cecil fine sandy loam holds an average of 2.3 inches of moisture. By referring to table 11, under the column giving 1.6 to 2.5 inches, we can see that for tobacco the chances are 5 in 10 that there will be at least 10 drought days in June. Thus, you weigh the cost of planting tobacco and then decide whether you should plant or not.

Table 11.—*Chance of drought days on soils of different moisture-storage capacity*

Month [1]	Chance	Minimum drought days if soil has a moisture-storage capacity of [2]				
		0.6 to 1.5 in.	1.6 to 2.5 in.	2.6 to 3.5 in.	3.6 to 4.5 in.	4.6 to 5.5 in.
April	1 in 10	11	0	0	0	0
	2 in 10	9	0	0	0	0
	3 in 10	7	0	0	0	0
	5 in 10	4	0	0	0	0
May	1 in 10	23	19	12	5	0
	2 in 10	19	14	7	0	0
	3 in 10	17	11	4	0	0
	5 in 10	12	5	0	0	0
June	1 in 10	23	20	18	14	10
	2 in 10	20	17	14	10	5
	3 in 10	18	14	11	7	0
	5 in 10	15	10	6	2	0
July	1 in 10	21	19	19	15	14
	2 in 10	18	15	14	11	9
	3 in 10	16	12	10	8	6
	5 in 10	12	7	4	2	0
August	1 in 10	19	16	14	12	10
	2 in 10	16	12	9	6	4
	3 in 10	14	9	5	2	0
	5 in 10	10	4	0	0	0
September	1 in 10	22	20	15	13	11
	2 in 10	19	15	11	8	5
	3 in 10	16	12	8	4	1
	5 in 10	12	6	2	0	0

[1] Months of January, February, March, October, November, and December are not shown because crops are rarely damaged by drought in these months.

[2] Storage capacity of soil is expressed as depth of water that a soil can hold and make available to plants.

Woodland

All of the area that is now Yadkin County was originally covered with trees, chiefly white oak, red oak, hickory, and other hardwoods. During the past 150 years or more, however, a large part of the county has been cleared and farmed intensively, particularly areas of nearly level soils on ridgetops, stream terraces, and bottom lands. Because they were poorly farmed, many fields became less productive and were abandoned. These fields were taken over by pure stands of shortleaf pine or Virginia pine, according to the kind of pine growing nearby.

Later the pines in many old fields were harvested, and the fields were planted to crops. The pines were cut because the demand for pine lumber increased; the fields were again cultivated because their productivity was increased by using commercial fertilizers. As a result, stands of mature pines are now rare, and these are mostly on eroded soils.

In most areas of hardwoods, the best trees have been cut and marketed. Left standing are only the less desirable species, the defective trees, and those too small to yield a salable product.

In the past few years, many farmers have improved the management of their woodland. Cuttings on more than 1,000 acres have been made to improve stands. During the 1958-59 planting season, the following kinds and numbers of seedlings were planted:

Kind	*Number*
Loblolly pine	133,000
Shortleaf pine	19,000
White pine	9,000
Redcedar	14,000
Yellow poplar	3,000

The average annual amount of sawtimber cut in Yadkin County is 9,200,000 board feet of pine and 5,000,000 board feet of hardwoods, a total of 14,200,000 board feet (*3*).

In 1960, 60 sawmills operated full time or intermittently. In addition, there were nine plants manufacturing lumber, one plant treating posts and poles, and four factories making tobacco baskets. A large amount of pine that is harvested in this county is sold as pulpwood at Elkin and Siloam in Surry County, at Donnaha in Forsyth County, and at Mocksville in Davie County, all on the Southern Railroad. According to the county agricultural agent, the net income from the sale of all forest products in 1958 was $536,250, or 5 percent of all income in the county.

At the present time, not many hardwoods are cut for woodpulp. If more were cut for this purpose, the wooded areas of the county could be improved by removing defective and other undesirable trees that are taking up space needed for high-value trees.

Wildlife

Early settlers found an abundance of wildlife and fish in this area. The wildlife consisted mainly of deer, turkey, squirrel, beaver, otter, mink, muskrat, and raccoon. Elk and bison probably ranged the woodlands, and bears, mountain lions, and wolves were destructive at times. In the larger streams were many white catfish, bass, sunfish, suckers, and eel. The cold headwaters contained brook trout.

Many kinds of wildlife that live in the woodlands became scarce or disappeared as farmers cleared more land and hunting and trapping increased. But there was an increase in the number of animals, including birds, that could live in areas of mixed farmland and woodland. Rabbit, quail, squirrel, raccoon, and fox increased greatly.

This increase, however, was temporary. Early in this century, hunting increased and farmers began to practice clean farming. They cleared the brush from the edges of fields and burned the weeds in the fencerows. These practices destroyed food and cover and further reduced the wildlife population. Improper farming increased soil erosion, and the soil added to the streams killed the fish. Commercial fishing further reduced the number of fish.

The wildlife population in Yadkin County is typical of the upper Piedmont. Most of the common animals remain about the same in number, but a few are increasing. Deer were released in 1946 and in 1947 by the North Carolina Wildlife Commission and are now well distributed in the northern part of the county. Because of the small wooded areas in the rest of the county, the widespread fox hunting, and the large number of stray dogs, the deer are not expected to spread through the county in large numbers.

In many areas the habitat for wildlife has been improved. This improvement has caused quail, rabbit, and other small game to increase. Squirrel, the most widely hunted animal, is abundant when nuts are plentiful. Raccoon has been stocked in several areas but is not plentiful, because the woodlands do not contain enough den trees. Though fox has been stocked by fox hunters and the gray fox is plentiful, the red fox is not. Enough mink are in the county to make trapping worthwhile, but muskrat, skunk, otter, and weasel are scarce.

The mourning dove, which breeds in the county and migrates from Northern States, provides excellent hunting in the open season. Enough ducks remain on the Yadkin River in winter to furnish sport for hunters, who jump-shoot them from boats in the river. A small flock of geese winters regularly on the river, but it does not provide much hunting.

In recent years, many farmers have improved the management of their soils. Because erosion has been reduced, less soil washes into the Yadkin River and its tributaries and these streams are more suitable for fish. The North Carolina Wildlife Commission has distributed several kinds of fish in the river and its tributaries and has stocked smallmouth bass in the cool headwaters. Most common in the river and in the lower parts of other streams are largemouth bass, crappie, bluegill, robins and other sunfish, white catfish, and suckers. In most of the 450 farm ponds in the county, several kinds of fish, chiefly bass and bluegill, have been stocked.

Agriculture

This section is provided for readers not acquainted with the agriculture of Yadkin County. It tells about land use, principal crops, livestock, pasture, and size and tenure of farms. The statistics given are from reports published by the U.S. Bureau of the Census and from unpublished data gathered by the U.S. Department of Agriculture.

Land Use

Yadkin County has a total area of 214,400 acres. In 1954, about 82 percent of the county, or 176,270 acres, was in farms. The acreage of farmland, by use, is listed as follows:

	Acres
Cropland, total	74,741
Harvested	53,104
Pastured	7,179
Not harvested or pastured	14,458
Woodland, total	77,862
Pastured	8,924
Not pastured	68,938
Other pasture (not cropland and not woodland)	15,052
Other land (farmsteads, roads, wasteland, etc.)	8,615

Crops

The principal crops in Yadkin County are tobacco, corn, small grains, and hay. In 1958, the acreage of principal crops was as follows:

	Acres
Tobacco	6,922
Corn	11,201
Soybeans, for beans	805
Milo and other sorghums	4,378
Wheat, for grain	7,057
Oats, for grain	4,100
Other small grains, for grain	4,378
All hay	14,846

Although the acreage in tobacco is less than 3.5 percent of the total area, the income from the sale of tobacco is 60 percent of all income in the county. Most farms have soils that are suited to tobacco, and most farmers grow the crop. The acreage in tobacco fluctuates little from year to year.

Corn is grown on most soils in the county. The largest areas planted to corn are on bottom land of the Yadkin River and its tributary streams. Small grains are planted extensively, and most plantings are harvested for grain.

Hay crops, principally lespedeza, are grown on most of the soils. Because many dairy farmers are now feeding their cattle in barns instead of pasturing them, the acreage in hay is likely to increase. For the same reason, farmers are likely to grow more crops for silage.

Livestock

Many farmers in Yadkin County raise dairy and meat products for shipment to heavily populated Forsyth County. Between 140 and 150 high-grade dairy herds are kept, and the number of dairy cattle is increasing. Poultry is raised throughout the county.

Few hogs are raised for the market, but some are raised for home use. The county has a few herds of beef cattle. Because more farms are mechanized, the number of draft horses is small.

Pasture

The trend in the county is toward more and better pasture. Many farmers use pasture to offset the shortage of labor. Almost all soils in the county can be used for pasture, but plants on upland areas are damaged by summer drought. Consequently, soils on the bottom lands are best suited.

Size and Tenure of Farms

The farms in the county averaged 56 acres in size in 1954. According to the 1954 census, the 3,148 farms were divided as follows:

Acres	*Number*	*Percent*
Under 10	555	17
10 to 29	752	24
30 to 49	568	18
50 to 99	812	26
100 to 179	336	11
180 and over	125	4

Most farmers in the county own the land they work, and ownership is retained in the family from one generation to the next. Few farms are sold. About 27 percent of the farms are operated by tenants, many of whom are landowners who need additional acreage for a profitable program of farming.

Glossary

Acidity, soil. The degree of acidity of a soil mass, technically expressed in pH values or in words. The terms used in this report are:

	pH
Strongly acid	5.1-5.5
Medium acid	5.6-6.0
Slightly acid	6.1-6.5

Alluvial soils. Soils forming in material recently deposited by water (alluvium) and showing little or no modification of the original materials by soil-forming processes.

Alluvium. Soil materials, as sand, silt, or clay, deposited on land by streams.

Clay. (1) As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. (2) As a soil textural class, soil material that contains 40 percent or more clay, as defined in (1), less than 45 percent sand, and less than 40 percent silt (7).

Colluvium. Mixed deposits of rock fragments and coarse soil material near the base of slopes. The deposits have accumulated through soil creep, slides, or local wash.

Consistence, soil. The combination of properties of soil material that determine its resistance to crushing and its ability to be molded or changed in shape. The moisture content of a soil affects consistence, which is described by terms for a wet, moist, or dry soil. The terms used in this report are defined as follows:

Firm. When moist, soil material crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Friable. When moist, soil material crushes easily under gentle to moderate pressure between thumb and forefinger and coheres when pressed together.

Hard. When dry, soil material is moderately resistant to pressure, can be broken in hands without difficulty, but is barely breakable between thumb and forefinger.

Loose. Soil material is noncoherent when moist and when dry.

Plastic. When soil is wet, wire can be formed by rolling the soil between the hands, but moderate pressure is required to deform the soil mass.

Slightly plastic. When soil is wet, a wire is formable, but the soil mass is easily deformed.

Slightly sticky. When wet, soil adheres to both thumb and forefinger after pressure but comes off one or the other rather cleanly. It is not appreciably stretched when the fingers are separated.

Sticky. When wet, soil adheres to both thumb and forefinger after pressure and tends to stretch somewhat and to pull apart rather than pulling from either finger.

Very firm. When moist, soil material crushes under strong pressure; barely can be crushed between thumb and forefinger.

Consistence, soil—Continued

Very friable. When moist, soil material crushes under very gentle pressure but coheres when pressed together.

Very sticky. When wet, soil adheres strongly to both thumb and forefinger after pressure and is decidely stretched when the fingers are separated.

Erosion. The wearing away or removal of soil material by water or wind.

Fertility, soil. The inherent quality of a soil as measured by the quantity of compounds provided for proper or balanced growth of plants.

First bottom. The normal flood plain of a stream, subject to frequent or occasional overflow.

Horizon, soil. A layer of soil, approximately parallel to the soil surface, that has characteristics produced by soil-forming processes.

Horizon A. The master horizon consisting of (1) one or more mineral horizons of maximum organic accumulation; or (2) surface or subsurface horizons that are lighter in color than the underlying horizon and which have lost clay minerals, iron, and aluminum with resultant concentration of the more resistant minerals; or (3) horizons belonging to both of these categories.

Horizon B. The master horizon of altered material characterized by (1) an accumulation of clay, iron, or aluminum, with accessory organic material; or (2) blocky or prismatic structure together with other characteristics, such as stronger colors, unlike those of the A horizons or the underlying horizons of nearly unchanged material; or (3) characteristics of both of these categories. Commonly, the lower limit of the B horizon corresponds to the lower limit of the solum.

Horizon C. A layer of unconsolidated material, relatively little affected by the influence of organisms and thought to be similar in chemical, physical, and mineralogical composition to the material from which at least a part of the overlying solum has developed.

Infiltration. The downward entry of water into soil or other material.

Loam soil. Soil having approximately equal amounts of sand, silt, and clay.

Mottled. Marked with spots of color and commonly a result of poor drainage. Descriptive terms for mottles follow: Contrast—*faint, distinct,* and *prominent;* abundance *few, common,* and *many;* and size—*fine, medium,* and *coarse.* The size measurements are as follows: *Fine,* commonly less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* commonly ranging between 5 and 15 millimeters (about 0.2 to 0.6 inch) along the greatest dimension; and *coarse,* commonly more than 15 millimeters (about 0.6 inch) along the greatest dimension.

Natural drainage. Refers to those conditions that existed during the development of the soil as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by such factors as sudden deepening of channels or blocking of drainage outlets.

Parent material. The horizon of weathered rock or partly weathered soil material from which the soil was formed. Horizon C of the soil profile.

Permeability, soil. The quality of the soil that enables it to transmit air and water. Moderately permeable soils transmit air and water readily. Such conditions are favorable for the growth of roots. Slowly permeable soils allow water and air to move so slowly that root growth may be restricted. Rapidly permeable soils transmit air and water rapidly. Root growth is good.

Phase, soil. The subdivision of a soil type having variations not significant to classification of the soil in its natural landscape but significant to the use and management of the soil. Examples of the variations recognized in soil phases are differences in slope, in stoniness, and in thickness because of accelerated erosion.

Productivity, soil. The capability of a soil to produce a specified plant or sequence of plants under a defined set of management practices.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. (See Acidity.)

Sand. (1) Individual rock or mineral fragments having diameters ranging from 0.05 millimeter (0.002 inch) to 2.0 millimeters (0.079 inch). Sand grains consist chiefly of quartz, but they may be of any mineral composition. (2) The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay (7).

Series, soil. A group of soils that, except for texture of the surface layer, are similar in profile characteristics and in arrangement of horizons. The soils of one series have developed from a particular type of parent material.

Silt. (1) Individual mineral particles of soil that range in diameter between the upper size of clay, 0.002 millimeter, and the lower size of very fine sand, 0.05 millimeter. (2) Soil of the textural class called silt contains 80 percent or more of silt and less than 12 percent of clay (7). (3) Sediments deposited from water in which the individual grains are approximately of the size of silt, although the term is sometimes applied loosely to sediments containing considerable sand and clay.

Soil. The natural medium for the growth of land plants. A soil is a natural three dimensional body on the surface of the earth and is unlike adjoining bodies.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soils consists of the A and B horizons.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. These aggregates have properties unlike those of an equal mass of unaggregated primary soil particles. The following defined terms of soil structure are used in this report:

Blocky, angular. Aggregates are shaped in the form of blocks; most of the ped faces are flat or slightly concave and angle vertices are sharp.

Blocky, subangular. Aggregates have some rounded and some plane surfaces; vertices are rounded.

Platy. Soil particles are arranged around a plane, generally horizontal.

Granular. Roughly spherical, firm, small aggregates that may be either hard or soft but are generally firmer than crumb structure and without the distinct faces of blocky structure.

The following terms are used to indicate a lack of definite structure:

Single grain. Each grain by itself, as in dune sand (structureless).

Massive. Large, uniform masses of cohesive soil, sometimes with irregular cleavage, as in the C horizons of many heavy clay soils (structureless).

Subsoil. Technically, the B horizon; commonly, that part of the profile below plow depth.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil; about 5 to 8 inches in thickness.

Terrace (geological). An old alluvial plain, generally flat or undulating, bordering a stream; frequently called second bottom, as contrasted with flood plain; seldom subject to overflow.

Texture, soil. The relative proportions of the various size groups of individual soil grains in a mass of soil; specifically, the proportions of sand, silt, and clay. The soil textural classes, in increasing order of the content of the finer separates, are as follows: *Sand, loamy sand, sandy loam, loam, silt loam,* and *clay.* These classes may be modified according to relative size of the coarser particles; for example, *fine sandy loam.*

Tilth, soil. The condition of the soil in its relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. Presumably fertile soil material used to dress roadbanks, gardens, and lawns.

Type, soil. A subdivision of the soil series based on the texture of the surface layer.

Upland (geologic). Land consisting of material unworked by water in recent geologic time and ordinarily lying at a higher elevation than the alluvial plain or stream terrace.

Weathering. The physical and chemical disintegration and decomposition of rocks and minerals.

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GUIDE TO MAPPING UNITS

Map symbol	Mapping unit	Page	Capability unit Symbol	Page	Woodland suitability group	Page
AfA	Altavista fine sandy loam, 0 to 2 percent slopes	37	IIw-2	7	3	21
AfB	Altavista fine sandy loam, 2 to 7 percent slopes	37	IIe-1	5	3	21
AfC	Altavista fine sandy loam, 7 to 10 percent slopes	37	IIIe-1	7	3	21
ApB	Appling fine sandy loam, 2 to 7 percent slopes	39	IIe-1	5	4A	21
ApB2	Appling fine sandy loam, 2 to 7 percent slopes, eroded	40	IIe-1	5	4B	21
ApC	Appling fine sandy loam, 7 to 10 percent slopes	40	IIIe-1	7	4A	21
ApC2	Appling fine sandy loam, 7 to 10 percent slopes, eroded	40	IIIe-1	7	4B	21
ApD	Appling fine sandy loam, 10 to 14 percent slopes	40	IVe-1	10	4A	21
ApD2	Appling fine sandy loam, 10 to 14 percent slopes, eroded	40	IVe-1	10	4B	21
ApE	Appling fine sandy loam, 14 to 25 percent slopes	40	VIe-1	13	4A	21
ApE2	Appling fine sandy loam, 14 to 25 percent slopes, eroded	40	VIe-1	13	4B	21
ApF	Appling fine sandy loam, 25 to 45 percent slopes	40	VIIe-1	15	4A	21
Au	Augusta silt loam	41	IIIw-1	10	3	21
Bn	Buncombe loamy sand	41	IIIs-1	10	7	23
Bu	Buncombe sand	41	IVs-1	13	7	23
CcB3	Cecil clay loam, 2 to 7 percent slopes, severely eroded	44	IIIe-5	9	4C	21
CcC3	Cecil clay loam, 7 to 10 percent slopes, severely eroded	43	IVe-5	12	4C	21
CcD3	Cecil clay loam, 10 to 14 percent slopes, severely eroded	44	IVe-5	12	4C	21
CcE3	Cecil clay loam, 14 to 25 percent slopes, severely eroded	44	VIe-2	14	4C	21
CcF3	Cecil clay loam, 25 to 40 percent slopes, severely eroded	44	VIIe-2	15	4C	21
CfB	Cecil fine sandy loam, 2 to 7 percent slopes	42	IIe-1	5	4A	21
CfB2	Cecil fine sandy loam, 2 to 7 percent slopes, eroded	42	IIe-1	5	4B	21
CfC	Cecil fine sandy loam, 7 to 10 percent slopes	42	IIIe-1	7	4A	21
CfC2	Cecil fine sandy loam, 7 to 10 percent slopes, eroded	42	IIIe-1	7	4B	21
CfD	Cecil fine sandy loam, 10 to 14 percent slopes	42	IVe-1	10	4A	21
CfD2	Cecil fine sandy loam, 10 to 14 percent slopes, eroded	42	IVe-1	10	4B	21
CfE	Cecil fine sandy loam, 14 to 25 percent slopes	42	VIe-1	13	4A	21
CfE2	Cecil fine sandy loam, 14 to 25 percent slopes, eroded	42	VIe-1	13	4B	21
CfF	Cecil fine sandy loam, 25 to 40 percent slopes	43	VIIe-1	15	4A	21
CfF2	Cecil fine sandy loam, 25 to 40 percent slopes, eroded	43	VIIe-1	15	4B	21
CgB	Cecil gravelly fine sandy loam, 2 to 7 percent slopes	43	IIe-1	5	4A	21
CgB2	Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded	43	IIe-1	5	4B	21
CgC	Cecil gravelly fine sandy loam, 7 to 10 percent slopes	43	IIIe-1	7	4A	21
CgC2	Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded	43	IIIe-1	7	4B	21
CgD	Cecil gravelly fine sandy loam, 10 to 14 percent slopes	43	IVe-1	10	4A	21
CgD2	Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded	43	IVe-1	10	4B	21
CgE	Cecil gravelly fine sandy loam, 14 to 25 percent slopes	43	VIe-1	13	4A	21
CgE2	Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded	43	VIe-1	13	4B	21
ClB2	Cecil loam, 2 to 7 percent slopes, eroded	44	IIe-1	5	4B	21
ClC	Cecil loam, 7 to 10 percent slopes	44	IIIe-1	7	4A	21
CmD3	Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded	49	IVe-5	12	4C	21
CmE3	Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded	49	VIe-2	14	4C	21
CnC2	Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded	48	IIIe-1	7	4B	21
CnD2	Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded	48	IVe-1	10	4B	21
CnE	Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes	48	VIe-1	13	4A	21
CnE2	Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded	49	VIe-1	13	4B	21
CnF	Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes	49	VIIe-1	15	4A	21
CnF2	Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded	49	VIIe-1	15	4B	21
Cp	Chewacla silt loam	45	IIIw-1	10	1	20
Cr	Congaree fine sandy loam	45	IIw-1	6	1	20
Cs	Congaree silt loam	45	IIw-1	6	1	20
DaB2	Davidson clay loam, 2 to 7 percent slopes, eroded	46	IIe-2	5	4B	21
DaC2	Davidson clay loam, 7 to 10 percent slopes, eroded	46	IIIe-2	8	4B	21
GeC2	Georgeville silt loam, 2 to 10 percent slopes, eroded	46	IIIe-1	7	4B	21
GeE	Georgeville silt loam, 10 to 25 percent slopes	47	VIe-1	13	4A	21
HaC	Halewood stony sandy loam, 7 to 10 percent slopes	47	IIIe-6	10	4A	21
HaD	Halewood stony sandy loam, 10 to 14 percent slopes	47	IVe-4	12	4A	21
HaE	Halewood stony sandy loam, 14 to 25 percent slopes	47	VIe-3	14	4A	21
HaF	Halewood stony sandy loam, 25 to 40 percent slopes	47	VIIe-2	15	4A	21
HwB2	Hiwassee loam, 2 to 7 percent slopes, eroded	49	IIe-2	5	4B	21
IrB	Iredell fine sandy loam, 2 to 7 percent slopes	50	IIe-3	6	6A	22
IrB2	Iredell fine sandy loam, 2 to 7 percent slopes, eroded	50	IIe-3	6	6A	22
IrC	Iredell fine sandy loam, 7 to 10 percent slopes	50	IIIe-3	8	6A	22
IrC2	Iredell fine sandy loam, 7 to 10 percent slopes, eroded	50	IVe-3	11	6A	22
IrD	Iredell fine sandy loam, 10 to 14 percent slopes	50	IVe-3	11	6A	22
IrD2	Iredell fine sandy loam, 10 to 14 percent slopes, eroded	50	VIe-3	14	6A	22
LcB3	Lloyd clay loam, 2 to 10 percent slopes, severely eroded	52	IIIe-5	9	4C	21
LcD3	Lloyd clay loam, 10 to 14 percent slopes, severely eroded	52	IVe-5	12	4C	21
LcE3	Lloyd clay loam, 14 to 25 percent slopes, severely eroded	52	VIe-2	14	4C	21
LdB	Lloyd loam, 2 to 7 percent slopes	51	IIe-2	5	4A	21
LdB2	Lloyd loam, 2 to 7 percent slopes, eroded	51	IIe-2	5	4B	21
LdC	Lloyd loam, 7 to 10 percent slopes	51	IIIe-2	8	4A	21
LdC2	Lloyd loam, 7 to 10 percent slopes, eroded	51	IIIe-2	8	4B	21
LdD	Lloyd loam, 10 to 14 percent slopes	51	IVe-2	11	4A	21
LdD2	Lloyd loam, 10 to 14 percent slopes, eroded	51	IVe-2	11	4B	21

GUIDE TO MAPPING UNITS—Continued

Map symbol	Mapping unit	Page	Capability unit Symbol	Page	Woodland suitability group	Page
LdE	Lloyd loam, 14 to 25 percent slopes	51	VIe-1	13	4A	21
LdE2	Lloyd loam, 14 to 25 percent slopes, eroded	51	VIe-1	13	4B	21
LdF	Lloyd loam, 25 to 40 percent slopes	51	VIIe-1	15	4A	21
Lo	Local alluvial land	52	IIw-2	7	1	20
LsD	Louisburg coarse sandy loam, 7 to 14 percent slopes	53	IVe-4	12	5A	21
LsE	Louisburg coarse sandy loam, 14 to 25 percent slopes	53	VIe-3	14	5A	21
LsF	Louisburg coarse sandy loam, 25 to 50 percent slopes	53	VIIe-2	15	5A	21
MaB	Madison fine sandy loam, 2 to 7 percent slopes	53	IIe-4	5	4A	21
MaB2	Madison fine sandy loam, 2 to 7 percent slopes, eroded	54	IIe-1	5	4B	21
MaC	Madison fine sandy loam, 7 to 10 percent slopes	54	IIIe-1	7	4A	21
MaC2	Madison fine sandy loam, 7 to 10 percent slopes, eroded	54	IIIe-1	7	4B	21
MaD	Madison fine sandy loam, 10 to 14 percent slopes	54	IVe-1	10	4A	21
MaD2	Madison fine sandy loam, 10 to 14 percent slopes, eroded	54	IVe-1	10	4B	21
MaE	Madison fine sandy loam, 14 to 25 percent slopes	54	VIe-1	13	4A	21
MdC	Madison gravelly fine sandy loam, 7 to 10 percent slopes	54	IIIe-1	7	4A	21
MdD	Madison gravelly fine sandy loam, 10 to 14 percent slopes	54	IVe-1	10	4A	21
MdD2	Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded	54	IVe-1	10	4B	21
MdE	Madison gravelly fine sandy loam, 14 to 25 percent slopes	54	VIe-1	13	4A	21
MdF	Madison gravelly fine sandy loam, 25 to 40 percent slopes	55	VIIe-1	15	4A	21
MfB	Mayodan fine sandy loam, 2 to 7 percent slopes	55	IIe-1	5	4A	21
MfB2	Mayodan fine sandy loam, 2 to 7 percent slopes, eroded	55	IIe-1	5	4B	21
MfC	Mayodan fine sandy loam, 7 to 10 percent slopes	55	IIIe-1	7	4A	21
MfC2	Mayodan fine sandy loam, 7 to 10 percent slopes, eroded	55	IIIe-1	7	4B	21
MfD	Mayodan fine sandy loam, 10 to 14 percent slopes	55	IVe-1	10	4A	21
MfD2	Mayodan fine sandy loam, 10 to 14 percent slopes, eroded	55	IVe-1	10	4B	21
MfF	Mayodan fine sandy loam, 14 to 40 percent slopes	55	VIe-1	13	4A	21
MkB2	Mecklenburg loam, 2 to 7 percent slopes, eroded	56	IIe-3	6	5B	22
MkC2	Mecklenburg loam, 7 to 14 percent slopes, eroded	56	IIIe-3	8	5B	22
MkE2	Mecklenburg loam, 14 to 25 percent slopes, eroded	56	VIe-1	13	5B	22
Mm	Mixed alluvial land, poorly drained	56	IVw-1	13	2	21
Mn	Mixed alluvial land, well drained	56	IIw-1	6	1	20
Mr	Moderately gullied land, rolling	57	IVe-5	12	8	23
Ms	Moderately gullied land, hilly	57	VIIe-2	15	8	23
Sg	Severely gullied land	57	VIIe-2	15	8	23
SmB	Starr loam, 0 to 7 percent slopes	57	IIe-2	5	1	20
Sn	State fine sandy loam	57	I-1	4	1	20
WaB	Wadesboro fine sandy loam, 2 to 7 percent slopes	58	IIe-1	5	4A	21
WaB2	Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded	58	IIe-1	5	4B	21
WaC	Wadesboro fine sandy loam, 7 to 10 percent slopes	58	IIIe-1	7	4A	21
WaC2	Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded	58	IIIe-1	7	4B	21
WaD	Wadesboro fine sandy loam, 10 to 14 percent slopes	58	IVe-1	10	4A	21
WaD2	Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded	58	IVe-1	10	4B	21
WaE	Wadesboro fine sandy loam, 14 to 30 percent slopes	59	VIe-1	13	4A	21
We	Wehadkee loams	59	IVw-1	13	2	21
WfB2	Wickham fine sandy loam, 2 to 7 percent slopes, eroded	59	IIe-1	5	4B	21
WfC2	Wickham fine sandy loam, 7 to 14 percent slopes, eroded	60	IIIe-1	7	4B	21
WkC	Wilkes sandy loams, 2 to 10 percent slopes	60	IIIe-4	9	6A	22
WkC3	Wilkes sandy loams, 2 to 10 percent slopes, severely eroded	60	VIIe-2	15	6B	22
WkD	Wilkes sandy loams, 10 to 14 percent slopes	60	IVe-4	12	6A	22
WkE	Wilkes sandy loams, 14 to 25 percent slopes	61	VIe-3	14	6A	22
WkE3	Wilkes sandy loams, 10 to 25 percent slopes, severely eroded	60	VIIe-2	15	6B	22
WkF	Wilkes sandy loams, 25 to 50 percent slopes	61	VIIe-2	15	6A	22
WoB	Worsham fine sandy loam, 0 to 7 percent slopes	61	IVw-2	13	2	21

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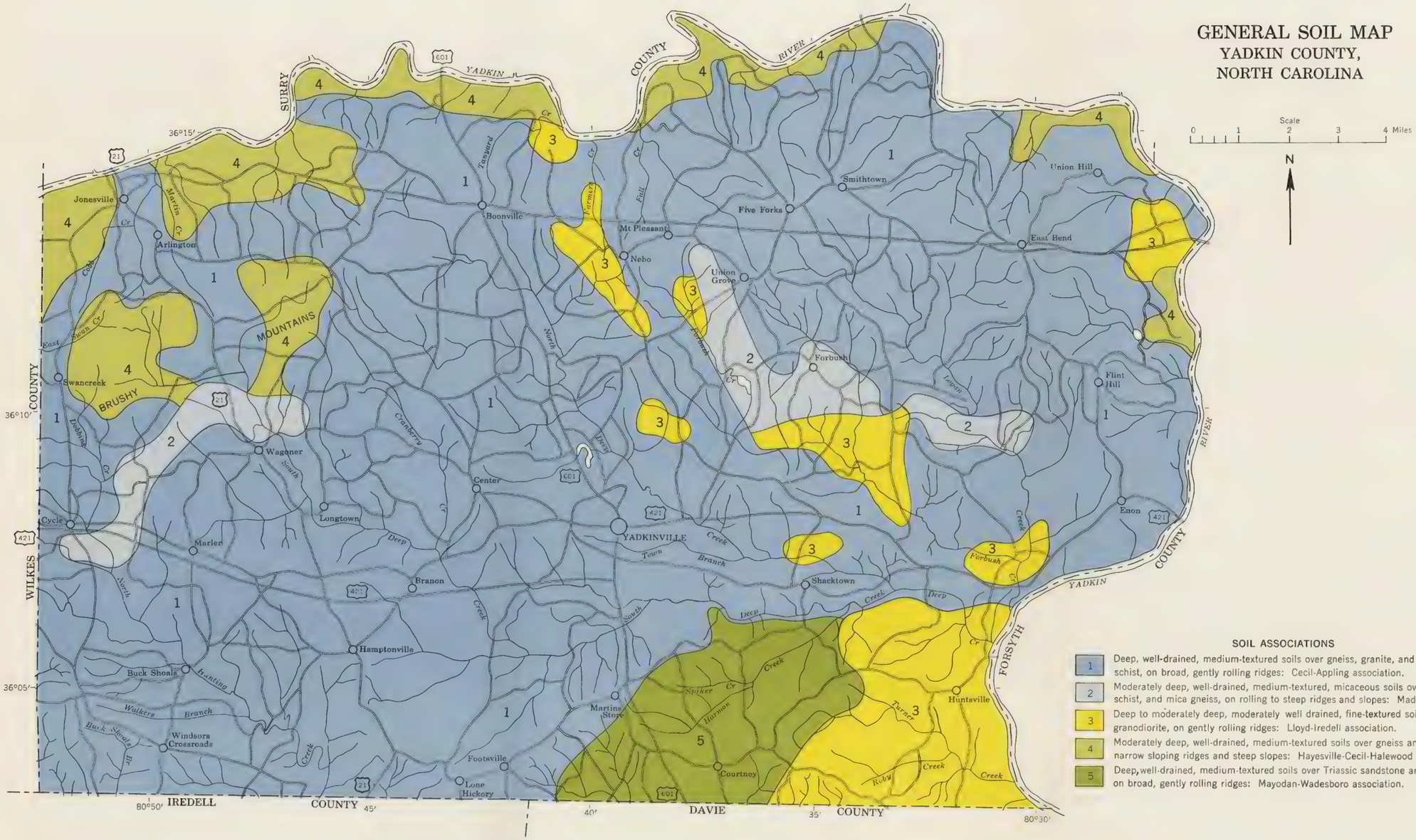
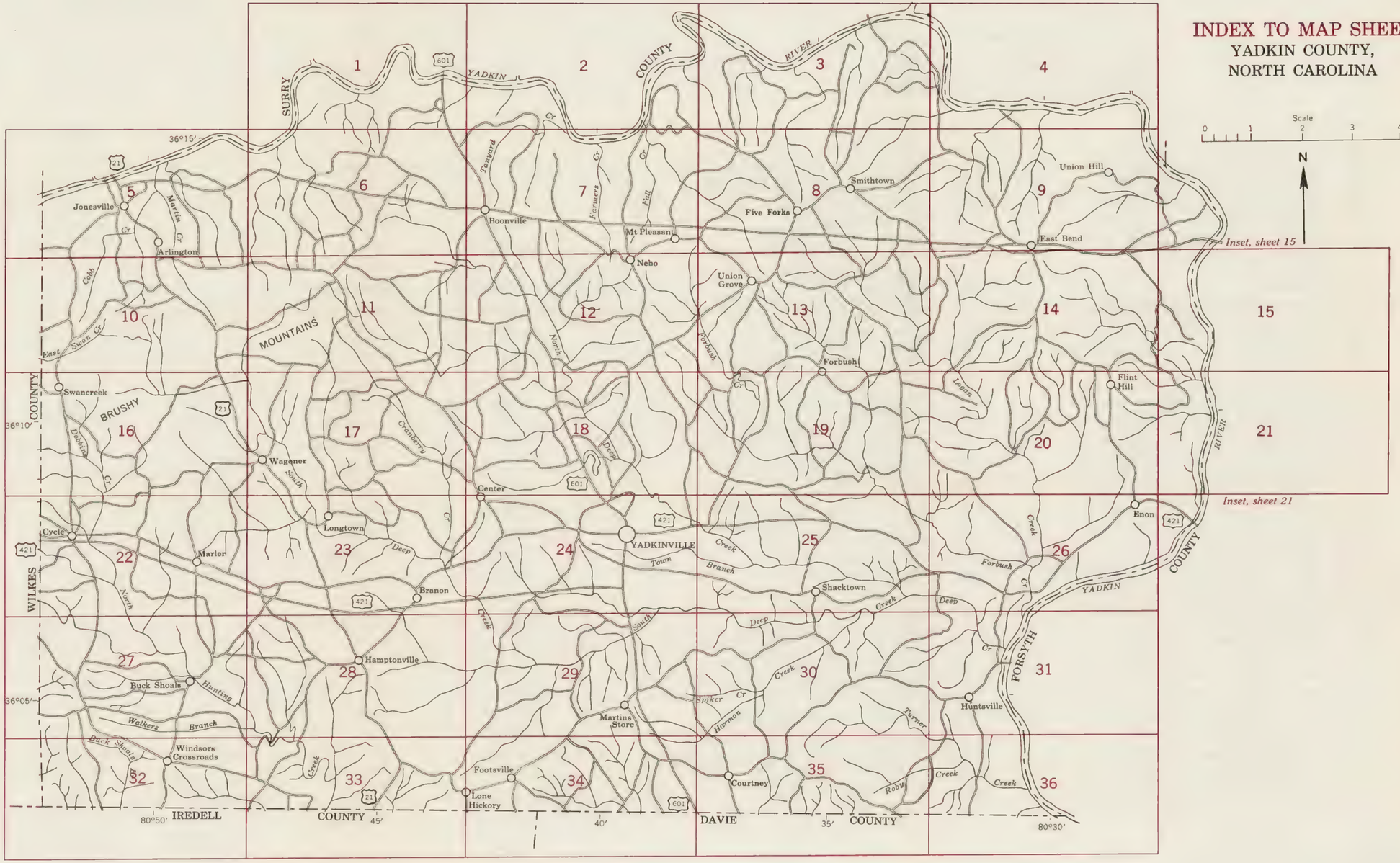
GENERAL SOIL MAP
YADKIN COUNTY, NORTH CAROLINA



SOIL ASSOCIATIONS

1. Deep, well-drained, medium-textured soils over gneiss, granite, and schist, on broad, gently rolling ridges: Cecil-Appling association.
2. Moderately deep, well-drained, medium-textured, micaceous soils over quartz mica schist, and mica gneiss, on rolling to steep ridges and slopes: Madison association.
3. Deep to moderately deep, moderately well drained, fine-textured soils over granodiorite, on gently rolling ridges: Lloyd-Iredell association.
4. Moderately deep, well-drained, medium-textured soils over gneiss and schist, on narrow sloping ridges and steep slopes: Hayesville-Cecil-Halewood association.
5. Deep, well-drained, medium-textured soils over Triassic sandstone and shale, on broad, gently rolling ridges: Mayodan-Wadesboro association.

INDEX TO MAP SHEETS
YADKIN COUNTY, NORTH CAROLINA



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

YADKIN COUNTY, NORTH CAROLINA

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter shows the slope. Symbols without a slope letter are those of nearly level soils, such as Congaree silt, or of land types that have a range of slope, such as Severely gullied land. Soils that are named as eroded have a final number, 2 or 3, in their symbol.

SYMBOL	NAME
AfA	Altavista fine sandy loam, 0 to 2 percent slopes
AfB	Altavista fine sandy loam, 2 to 7 percent slopes
AfC	Altavista fine sandy loam, 7 to 10 percent slopes
ApB	Appling fine sandy loam, 2 to 7 percent slopes
ApB2	Appling fine sandy loam, 2 to 7 percent slopes, eroded
ApC	Appling fine sandy loam, 7 to 10 percent slopes
ApC2	Appling fine sandy loam, 7 to 10 percent slopes, eroded
ApD	Appling fine sandy loam, 10 to 14 percent slopes
ApD2	Appling fine sandy loam, 10 to 14 percent slopes, eroded
ApE	Appling fine sandy loam, 14 to 25 percent slopes
ApE2	Appling fine sandy loam, 14 to 25 percent slopes, eroded
ApF	Appling fine sandy loam, 25 to 45 percent slopes
Au	Augusta silt loam
Bn	Buncombe loamy sand
Bu	Buncombe sand
CcB3	Cecil clay loam, 2 to 7 percent slopes, severely eroded
CcC3	Cecil clay loam, 7 to 10 percent slopes, severely eroded
CcD3	Cecil clay loam, 10 to 14 percent slopes, severely eroded
CcE3	Cecil clay loam, 14 to 25 percent slopes, severely eroded
CcF3	Cecil clay loam, 25 to 40 percent slopes, severely eroded
CfB	Cecil fine sandy loam, 2 to 7 percent slopes
CfB2	Cecil fine sandy loam, 2 to 7 percent slopes, eroded
CfC	Cecil fine sandy loam, 7 to 10 percent slopes
CfC2	Cecil fine sandy loam, 7 to 10 percent slopes, eroded
CfD	Cecil fine sandy loam, 10 to 14 percent slopes
CfD2	Cecil fine sandy loam, 10 to 14 percent slopes, eroded
CfE	Cecil fine sandy loam, 14 to 25 percent slopes
CfE2	Cecil fine sandy loam, 14 to 25 percent slopes, eroded
CfF	Cecil fine sandy loam, 25 to 40 percent slopes
CfF2	Cecil fine sandy loam, 25 to 40 percent slopes, eroded
CgB	Cecil gravelly fine sandy loam, 2 to 7 percent slopes
CgB2	Cecil gravelly fine sandy loam, 2 to 7 percent slopes, eroded
CgC	Cecil gravelly fine sandy loam, 7 to 10 percent slopes
CgC2	Cecil gravelly fine sandy loam, 7 to 10 percent slopes, eroded
CgD	Cecil gravelly fine sandy loam, 10 to 14 percent slopes
CgD2	Cecil gravelly fine sandy loam, 10 to 14 percent slopes, eroded
CgE	Cecil gravelly fine sandy loam, 14 to 25 percent slopes
CgE2	Cecil gravelly fine sandy loam, 14 to 25 percent slopes, eroded
ClB2	Cecil loam, 2 to 7 percent slopes, eroded
ClC	Cecil loam, 7 to 10 percent slopes
CmD3	Hayesville and Cecil clay loams, 7 to 14 percent slopes, severely eroded
CmE3	Hayesville and Cecil clay loams, 14 to 25 percent slopes, severely eroded
CnC2	Hayesville and Cecil fine sandy loams, 7 to 10 percent slopes, eroded
CnD2	Hayesville and Cecil fine sandy loams, 10 to 14 percent slopes, eroded
CnE	Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes
CnE2	Hayesville and Cecil fine sandy loams, 14 to 25 percent slopes, eroded
CnF	Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes
CnF2	Hayesville and Cecil fine sandy loams, 25 to 40 percent slopes, eroded
Cp	Chewacla silt loam
Cr	Congaree fine sandy loam
Cs	Congaree silt loam
DaB2	Davidson clay loam, 2 to 7 percent slopes, eroded
DaC2	Davidson clay loam, 7 to 10 percent slopes, eroded
GeC2	Georgeville silt loam, 2 to 10 percent slopes, eroded
GeE	Georgeville silt loam, 10 to 25 percent slopes
HaC	Halewood stony sandy loam, 7 to 10 percent slopes
HaD	Halewood stony sandy loam, 10 to 14 percent slopes
HaE	Halewood stony sandy loam, 14 to 25 percent slopes
HaF	Halewood stony sandy loam, 25 to 40 percent slopes
HwB2	Hiwassee loam, 2 to 7 percent slopes, eroded
IrB	Iredell fine sandy loam, 2 to 7 percent slopes
IrB2	Iredell fine sandy loam, 2 to 7 percent slopes, eroded
IrC	Iredell fine sandy loam, 7 to 10 percent slopes
IrC2	Iredell fine sandy loam, 7 to 10 percent slopes, eroded
IrD	Iredell fine sandy loam, 10 to 14 percent slopes
IrD2	Iredell fine sandy loam, 10 to 14 percent slopes, eroded
LcB3	Lloyd clay loam, 2 to 10 percent slopes, severely eroded
LcD3	Lloyd clay loam, 10 to 14 percent slopes, severely eroded
LcE3	Lloyd clay loam, 14 to 25 percent slopes, severely eroded
LdB	Lloyd loam, 2 to 7 percent slopes
LdB2	Lloyd loam, 2 to 7 percent slopes, eroded
LdC	Lloyd loam, 7 to 10 percent slopes
LdC2	Lloyd loam, 7 to 10 percent slopes, eroded
LdD	Lloyd loam, 10 to 14 percent slopes
LdD2	Lloyd loam, 10 to 14 percent slopes, eroded
LdE	Lloyd loam, 14 to 25 percent slopes
LdE2	Lloyd loam, 14 to 25 percent slopes, eroded
LdF	Lloyd loam, 25 to 40 percent slopes
Lo	Local alluvial land
LsD	Louisburg coarse sandy loam, 7 to 14 percent slopes
LsE	Louisburg coarse sandy loam, 14 to 25 percent slopes
LsF	Louisburg coarse sandy loam, 25 to 50 percent slopes
MaB	Madison fine sandy loam, 2 to 7 percent slopes
MaB2	Madison fine sandy loam, 2 to 7 percent slopes, eroded
MaC	Madison fine sandy loam, 7 to 10 percent slopes
MaC2	Madison fine sandy loam, 7 to 10 percent slopes, eroded
MaD	Madison fine sandy loam, 10 to 14 percent slopes
MaD2	Madison fine sandy loam, 10 to 14 percent slopes, eroded
MaE	Madison fine sandy loam, 14 to 25 percent slopes
MdC	Madison gravelly fine sandy loam, 7 to 10 percent slopes
MdD	Madison gravelly fine sandy loam, 10 to 14 percent slopes
MdD2	Madison gravelly fine sandy loam, 10 to 14 percent slopes, eroded
MdE	Madison gravelly fine sandy loam, 14 to 25 percent slopes
MdF	Madison gravelly fine sandy loam, 25 to 40 percent slopes
MfB	Mayodan fine sandy loam, 2 to 7 percent slopes
MfB2	Mayodan fine sandy loam, 2 to 7 percent slopes, eroded
MfC	Mayodan fine sandy loam, 7 to 10 percent slopes
MfC2	Mayodan fine sandy loam, 7 to 10 percent slopes, eroded
MfD	Mayodan fine sandy loam, 10 to 14 percent slopes
MfD2	Mayodan fine sandy loam, 10 to 14 percent slopes, eroded
MfF	Mayodan fine sandy loam, 14 to 40 percent slopes
MkB2	Mecklenburg loam, 2 to 7 percent slopes, eroded
MkC2	Mecklenburg loam, 7 to 14 percent slopes, eroded
MkE2	Mecklenburg loam, 14 to 25 percent slopes, eroded
Mm	Mixed alluvial land, poorly drained
Mn	Mixed alluvial land, well drained
Mr	Moderately gullied land, rolling
Ms	Moderately gullied land, hilly
Sg	Severely gullied land
SmB	Starr loam, 0 to 7 percent slopes
Sn	State fine sandy loam
WaB	Wadesboro fine sandy loam, 2 to 7 percent slopes
WaB2	Wadesboro fine sandy loam, 2 to 7 percent slopes, eroded
WaC	Wadesboro fine sandy loam, 7 to 10 percent slopes
WaC2	Wadesboro fine sandy loam, 7 to 10 percent slopes, eroded
WaD	Wadesboro fine sandy loam, 10 to 14 percent slopes
WaD2	Wadesboro fine sandy loam, 10 to 14 percent slopes, eroded
WaE	Wadesboro fine sandy loam, 14 to 30 percent slopes
We	Wehadkee loams
WfB2	Wickham fine sandy loam, 2 to 7 percent slopes, eroded
WfC2	Wickham fine sandy loam, 7 to 14 percent slopes, eroded
WkC	Wilkes sandy loams, 2 to 10 percent slopes
WkC3	Wilkes sandy loams, 2 to 10 percent slopes, severely eroded
WkD	Wilkes sandy loams, 10 to 14 percent slopes
WkE3	Wilkes sandy loams, 10 to 25 percent slopes, severely eroded
WkE	Wilkes sandy loams, 14 to 25 percent slopes
WkF	Wilkes sandy loams, 25 to 50 percent slopes
WoB	Worsham fine sandy loam, 0 to 7 percent slopes

Soil map constructed 1961 by Cartographic Division, Soil Conservation Service, USDA, from 1955 aerial photographs. Controlled mosaic based on North Carolina plane coordinate system, state zone, Lambert conformal conic projection, 1927 North American datum.

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Dual
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail, foot
- Railroad
- Ferries
- Ford
- Grade
- R. R. over
- R. R. under
- Tunnel

Buildings
- School
- Church
- Station

Mines and Quarries
- Mine dump
- Pits, gravel or other

Power lines
Pipe lines
Cemeteries
Dams
Levees
Tanks
Oil wells

BOUNDARIES

- National or state
- County
- Township, U. S.
- Section line, corner
- Reservation
- Land grant

DRAINAGE

Streams
- Perennial
- Intermittent, unclass.

Canals and ditches (CANAL / DITCH)

Lakes and ponds
- Perennial
- Intermittent

Wells (flowing)
Springs
Marsh
Wet spot

RELIEF

Escarpments
- Bedrock
- Other

Prominent peaks

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stones
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gullies

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 1

N

(1)

(Joins sheet 2)

(Joins sheet 6)

0 ½ 1 Mile

Scale 1:15840

0 5000 Feet

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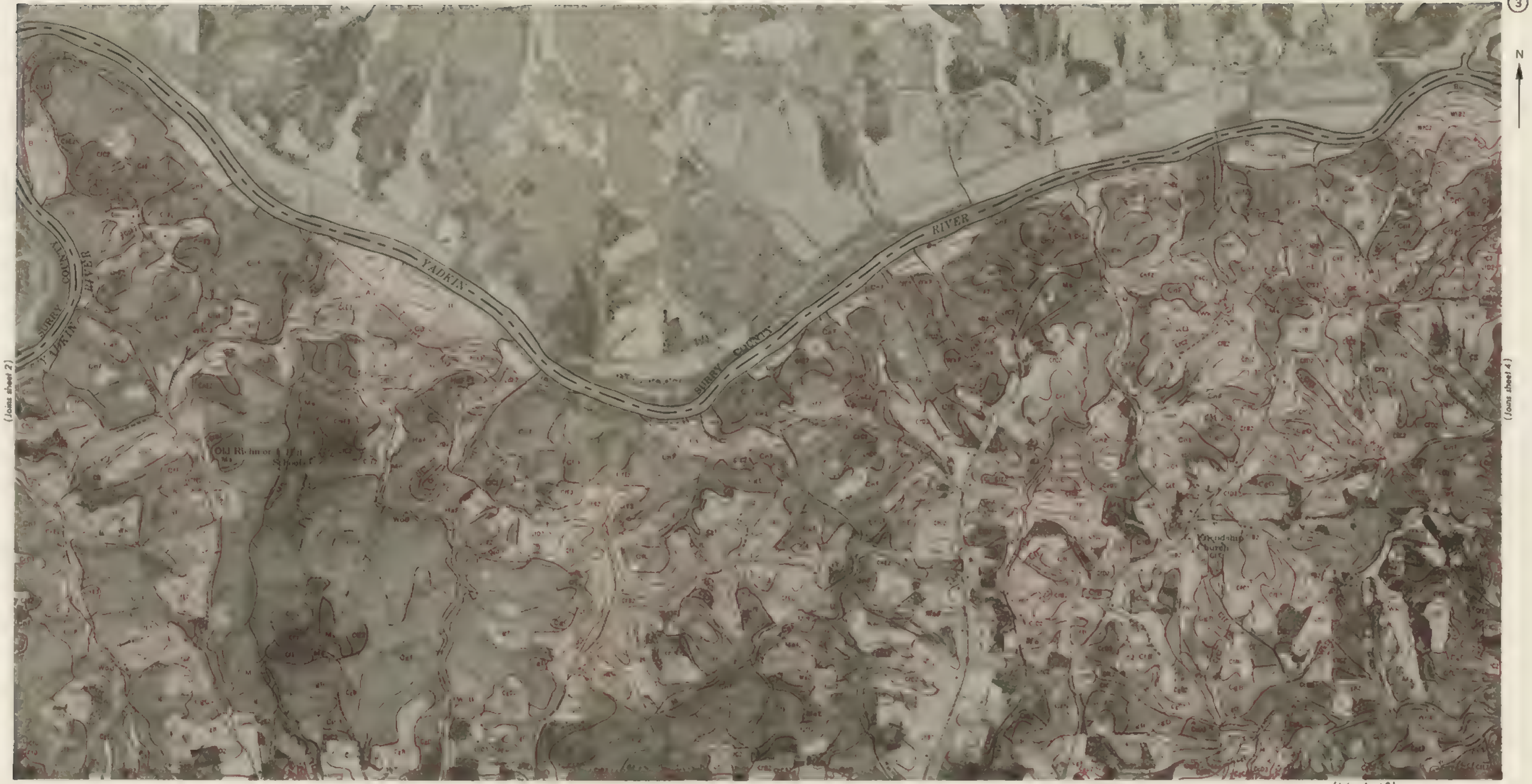
(Joins sheet 1)
(Joins sheet 3)
(Joins sheet 7)

Scale 1:15840



Scale 1:15 840

(Joins sheet 8)


N
SURRY COUNTY
YADKIN
RIVER
SURRY COUNTY
(Joins sheet 3)
(Joins sheet 9)
Scale 1:15840

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 5


(Joins sheet 1)
N
(Joins sheet 5)
(Joins sheet 7)
(Joins sheet 11)
YADKIN COUNTY
SURRY COUNTY
2
1/2
0
Mile
Scale 1:15840
5000 Feet

(Joins sheet 2)

(Joins sheet 6)

(Joins sheet 8)

(Joins sheet 12)

Scale 1:15840

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(Joins sheet 3)

8

N

(Joins sheet 7)

(Joins sheet 9)

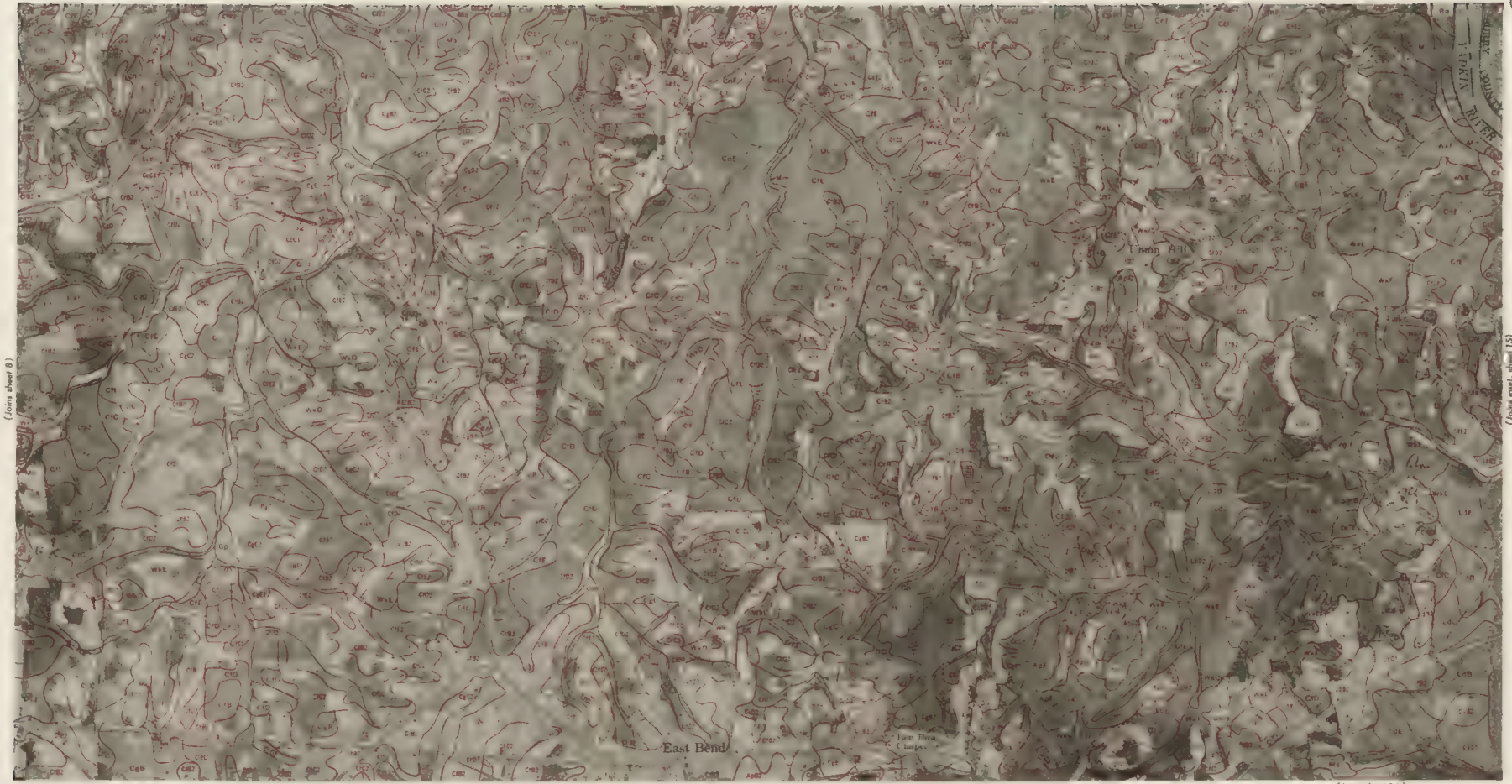
(Joins sheet 13)

0 ½ Mile

Scale 1:15840

0 5000 Feet

(Joins sheet 4)



N

(Joins sheet 8)

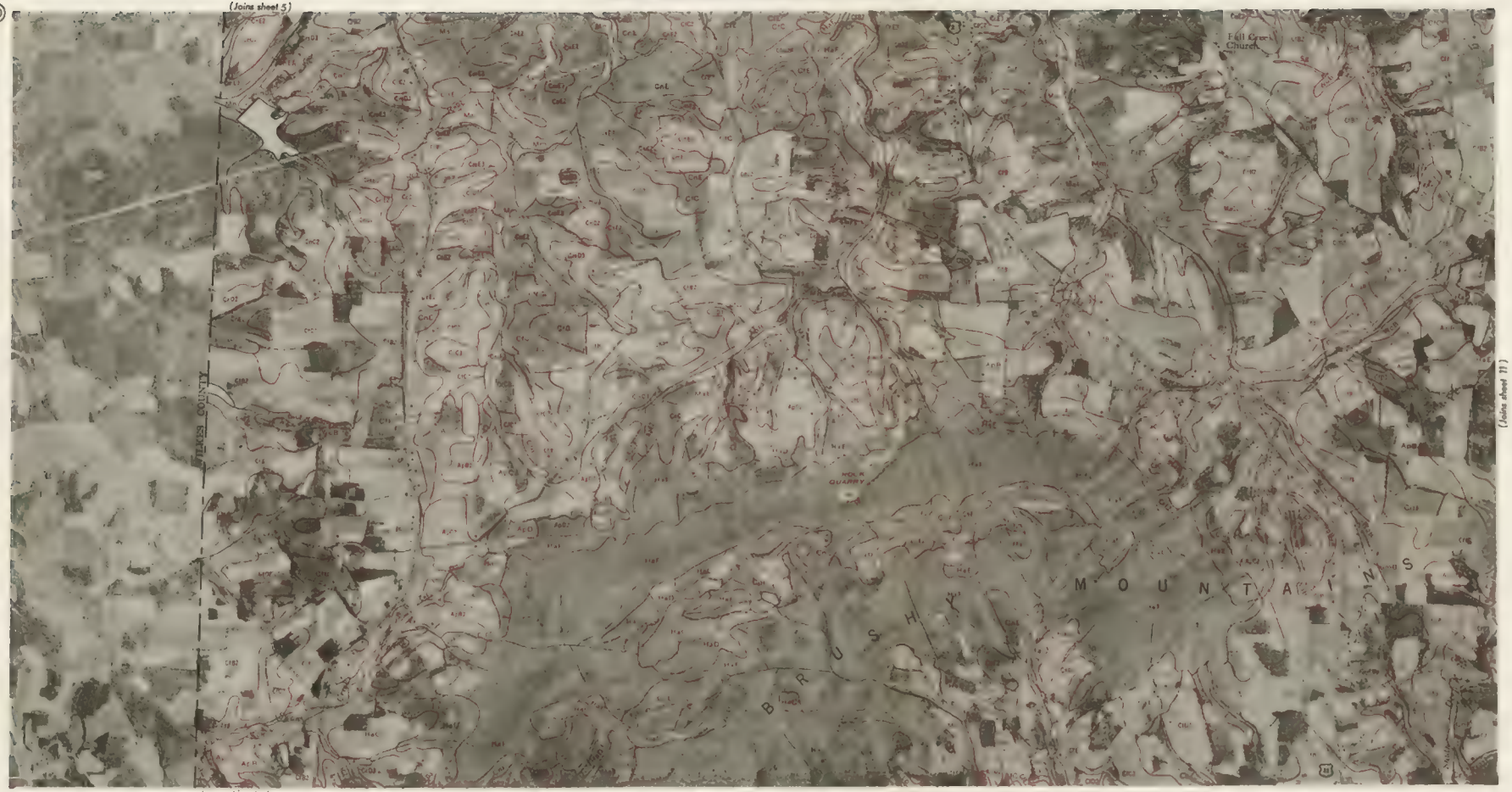
(Joins east, sheet 15)

(Joins sheet 14)

Scale 1:15840

1 Mile

5000 Feet


10
N
(Joins sheet 5)
Fall Creek Church
WILKES COUNTY
HOLT QUARRY
BRUSHY MOUNTAINS
(Joins sheet 11)
(Joins sheet 16)
Scale 1:15840
1/2 Mile
0
5000 Feet

(Joins sheet 6)

11

(Joins sheet 10)

(Joins sheet 12)

(Joins sheet 17)

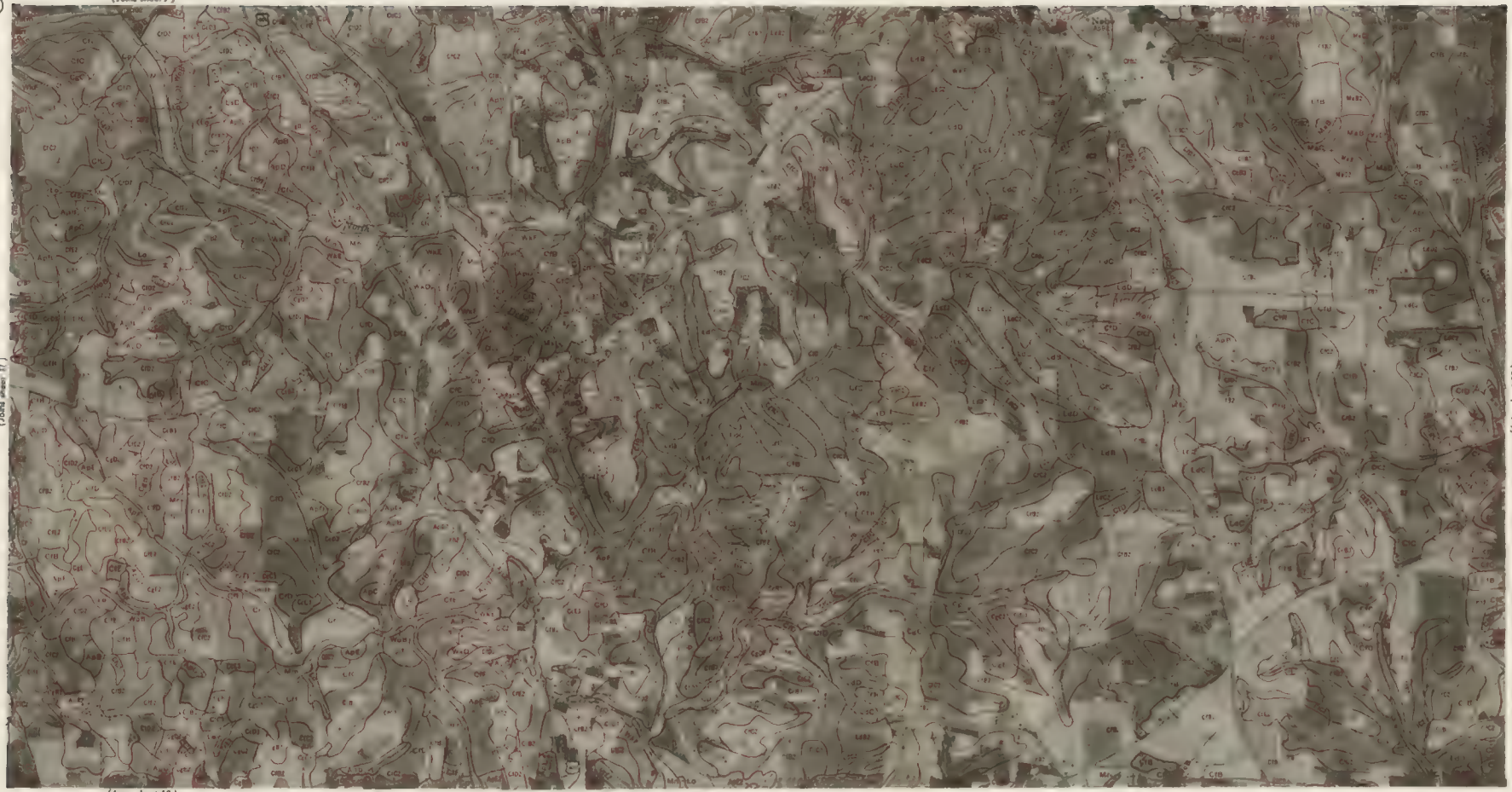
0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

(Joins sheet 7)

(Joins sheet 11)

(Joins sheet 13)

(Joins sheet 18)



Scale 1:15840

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 13

(Joins sheet 8)

13

N

(Joins sheet 12)

(Joins sheet 14)

(Joins sheet 19)

Scale 1:15 840

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(14)

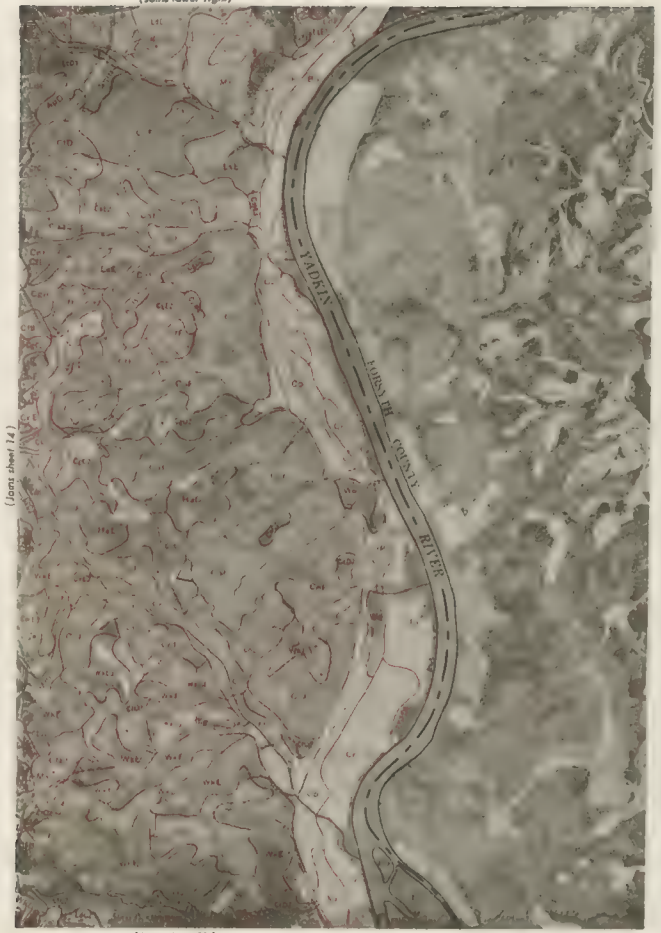
(Joins sheet 9)

(Joins sheet 13)

(Joins sheet 15)

(Joins sheet 20)

Scale 1:15840



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Scale 1:15840

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 16

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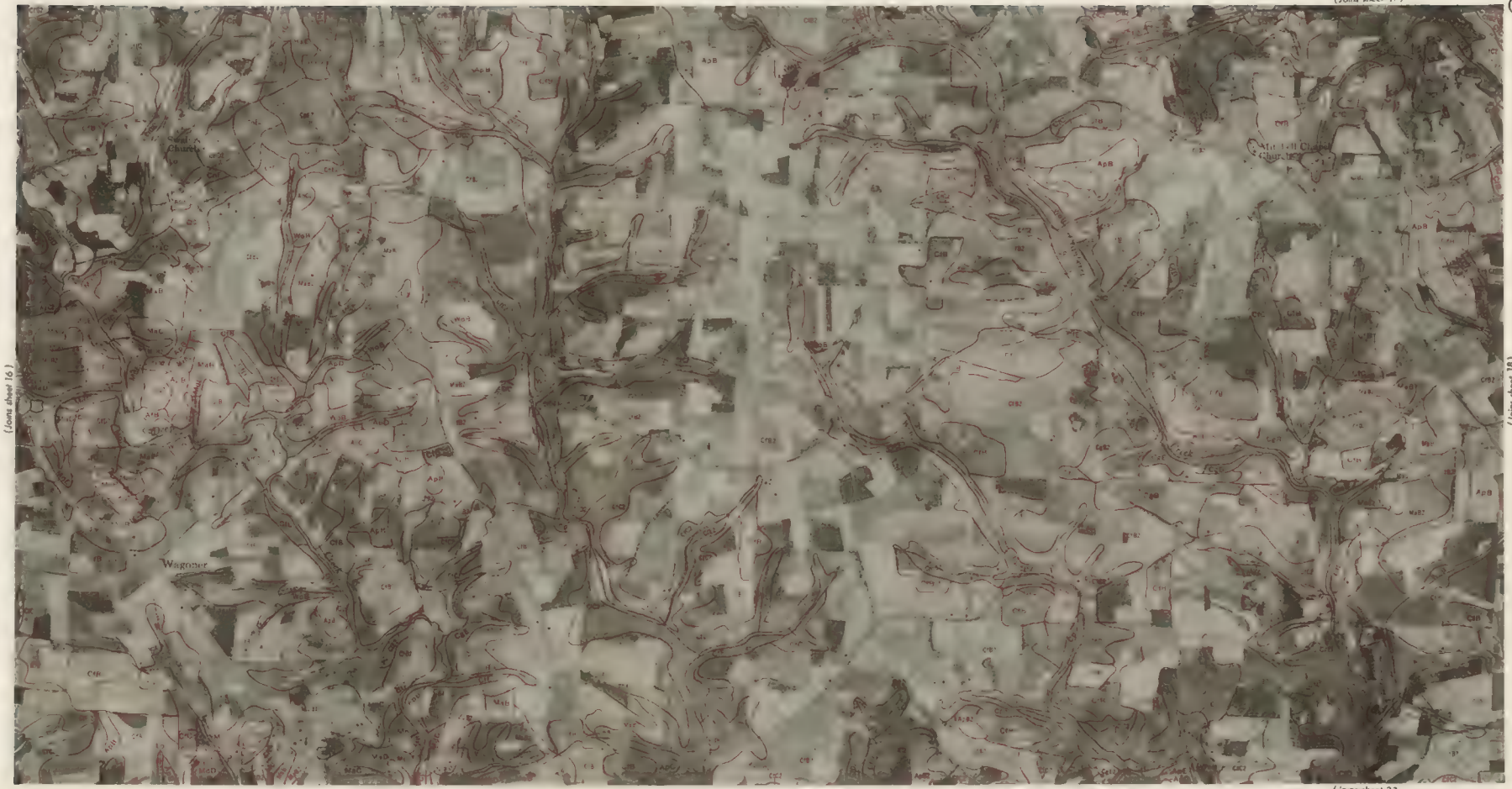
N

(Joins sheet 11)

(17)



(Joins sheet 16)

(Joins sheet 18)

(Joins sheet 23)

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YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 18

(Joins sheet 12)

N

(Joins sheet 17)

(Joins sheet 19)

(Joins sheet 24)

Scale 1:15840

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 19

(Joins sheet 13)

19

N

(Joins sheet 18)

(Joins sheet 20)

(Joins sheet 25)

Scale 1:15840

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(Joins sheet 14)

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 20

N

(Joins sheet 19)

(Joins sheet 21)

(Joins sheet 26)

Scale 1:15840

(Joins sheet 15)

(Joins sheet 20)

(Joins upper right)

(Joins lower left)

(Joins sheet 26)

N

Scale 1:15840

1 Mile

5000 Feet

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(Joins sheet 16)

YADKIN COUNTY, NORTH CAROLINA · SHEET NUMBER 22

N

(Joins sheet 23)

(Joins sheet 27)

Scale 1:15840

(Joins sheet 17)

(Joins sheet 22)

(Joins sheet 24)

(Joins sheet 28)

½ 1 Mile Scale 1:15840 1 5000 Feet

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 24

(Joins sheet 19)

25

N

(Joins sheet 24)

(Joins sheet 26)

(Joins sheet 30)

1 Mile — Scale 1:15 840 — 0 — 5000 Feet

(Joins sheet 20)

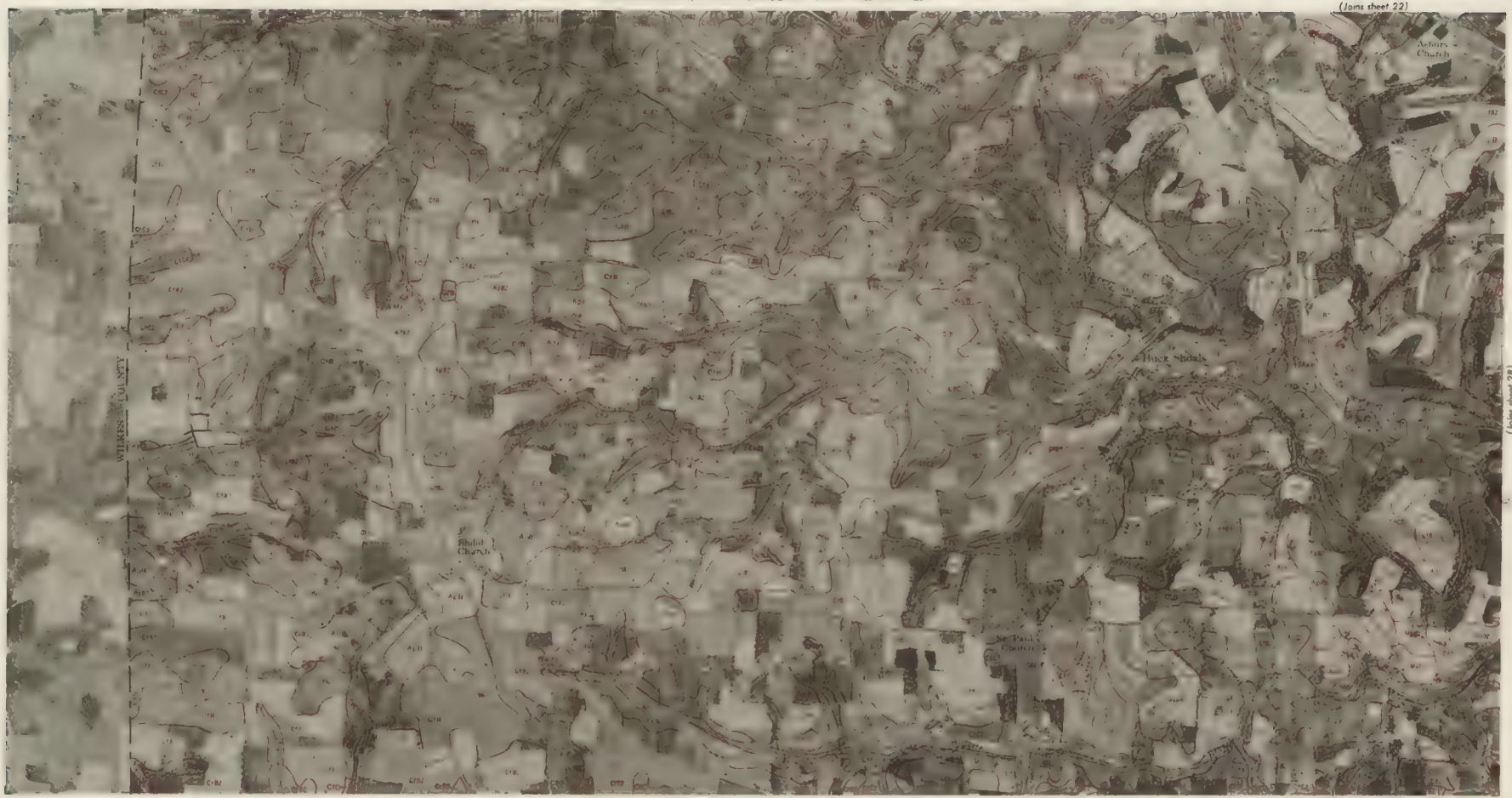
(Joins sheet 25)

(Joins inset, sheet 21)

(Joins sheet 31)

Scale 1:15840

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 27



(28)

(Joins sheet 23)

N

(Joins sheet 27)

(Joins sheet 29)

(Joins sheet 33)

0 ½ 1 Mile

Scale 1:15840

0 5000 ...

(Joins sheet 24)

(Joins sheet 28)

(Joins sheet 30)

(Joins sheet 34)

0 ½ 1 Mile Scale 1:15 840 0 5000 Feet

(Joins sheet 25)

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 30

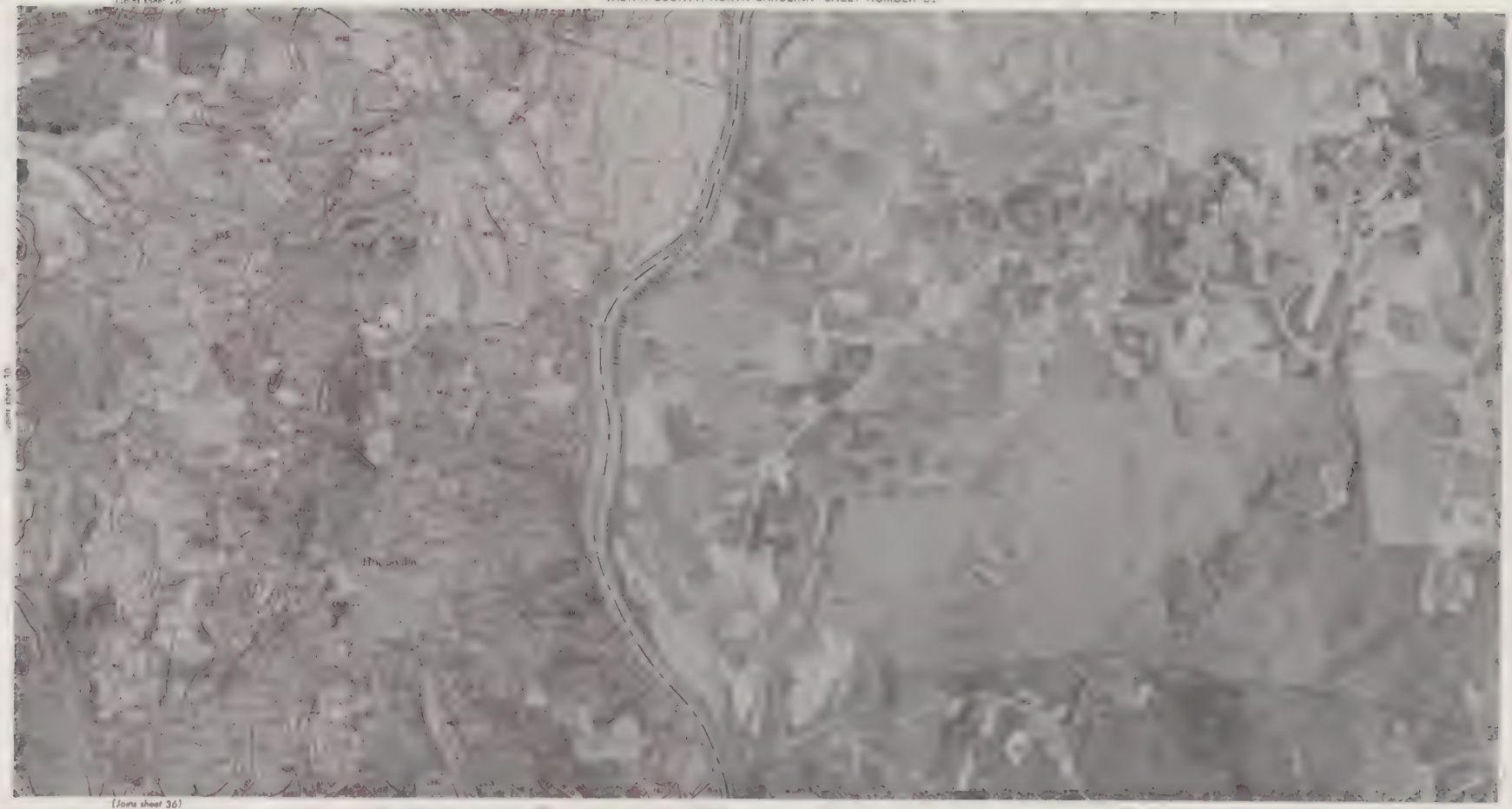
N

(Joins sheet 29)

(Joins sheet 31)

(Joins sheet 35)

Scale 1:15840



(Joins sheet 36)

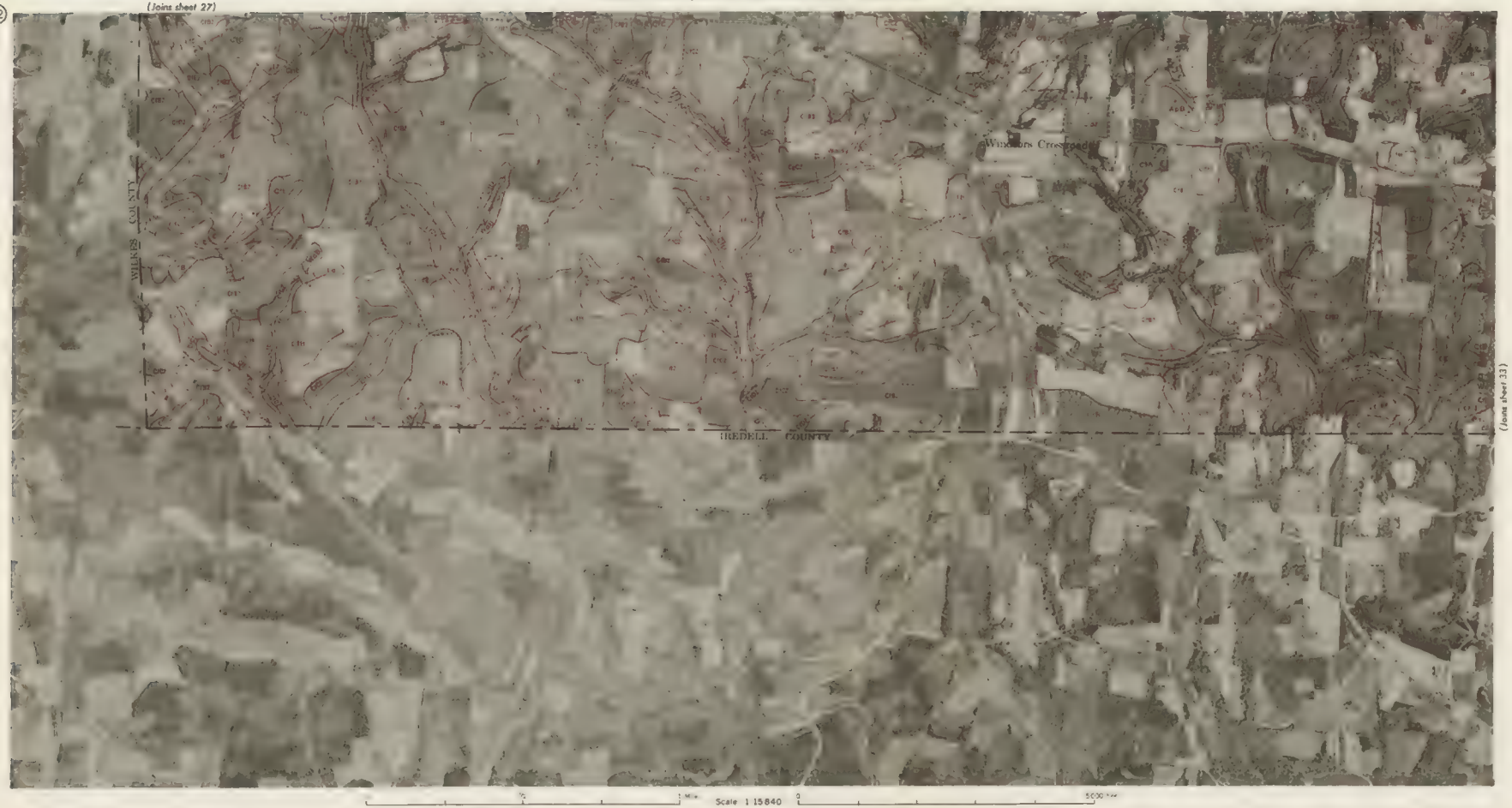
Scale 1:15840

5000 Feet

N

31

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 32



YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 33

(Joins sheet 28)

33

N

(Joins sheet 32)

(Joins sheet 34)

0 ½ 1 Mile

Scale 1:15840

0 5000 Feet

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(Joins sheet 29)

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 34

N

(Joins sheet 33)

(Joins sheet 35)

0 ½ 1 Mile Scale 1:15840 0 5000 Feet

YADKIN COUNTY, NORTH CAROLINA - SHEET NUMBER 35

(Joins sheet 30)

35

N

(Joins sheet 34)

(Joins sheet 36)

0 ½ 1 Mile

Scale 1:15 840

0 5000 Feet

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(Joins sheet 31)
36
N
(Joins sheet 35)
YADKIN
DAVIE COUNTY
0
½
Miles
Scale 1:15840
0
5000 Feet